

AD-A097 288

NAVAL POSTGRADUATE SCHOOL MONTEREY CA
AN INTERNATIONAL COMPARISON OF MILITARY COMPENSATION.(U)
DEC 80 M C OYLOE

F/6 5/9

UNCLASSIFIED

NL

101
AC
AD 101

END
DATE
FILMED
7-3-81
DTIC

AD A 097288

LEVEL II

(2)

NAVAL POSTGRADUATE SCHOOL
Monterey, California



DTIC
ELECTE
S APR 03 1981
F

THESIS

AN INTERNATIONAL COMPARISON OF
MILITARY COMPENSATION

by

Myron Clifford Oyløe
Major, United States Army
B.S. North Dakota State University, 1967

December 1980

Thesis Advisor:

Ragnhild Sohlberg

Approved for public release; distribution unlimited

DTIC FILE COPY

81 4

3 037

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
	AD-A094288	
4. TITLE (and Subtitle)		5. TYPE OF REPORT & PERIOD COVERED
(6) An International Comparison of Military Compensation,		Master's Thesis December 1980
7. AUTHOR(s)		6. PERFORMING ORG. REPORT NUMBER
(10) Myron Clifford Oylloe Major, United States Army		
8. PERFORMING ORGANIZATION NAME AND ADDRESS		9. CONTRACT OR GRANT NUMBER(s)
Naval Postgraduate School Monterey, California 93940		
10. CONTROLLING OFFICE NAME AND ADDRESS		11. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
Naval Postgraduate School Monterey, California 93940		(12) 231
11. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE
Naval Postgraduate School Monterey, California 93940		(11) Dec 1980
		13. NUMBER OF PAGES
		84
		14. SECURITY CLASS. (of this report)
		Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)		
Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
International comparison of military wages, salaries, and pay for officers and enlisted personnel. Retention of U.S. military personnel		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
<p>This thesis attempts to determine if an international comparison of nominal military wages can provide insight into the problem of retaining mid-career officers, noncommissioned officers, and petty officers in the U.S. military.</p> <p>The analysis indicates that United States' noncommissioned officers and petty officers are being compensated relatively less than their foreign counterparts but this does not hold</p>		

DD FORM 1473
1 JAN 73

EDITION OF 1 NOV 68 IS OBSOLETE
S/N 0102-014-6001

Unclassified 357450

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE/When Data Entered

for officers. However, because other occupational choice factors are interrelated with compensation, monetary compensation is not the only determinant affecting retention. The relatively higher U.S. officer compensation levels may be insufficient to offset the possibly greater perceived disutility associated with U.S. military service, or U.S. officers may have better opportunities in the civilian sector than their foreign counterparts. The relative cost-effectiveness of other policy variables than compensation may be worth analyzing.

DD Form 1473
Jan 73
S/N 0102-014-6801

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE/When Data Entered

Approved for public release; distribution unlimited

An International Comparison Of
Military Compensation

by

Myron Clifford Oyloe
Major, United States Army
B.S. North Dakota State University, 1967

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
December 1980

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	<input type="checkbox"/>
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A	

Author

Approved by

Thesis Advisor

Second Reader

Chairman, Department of Administrative Science

Dean of Information and Policy Sciences

ABSTRACT

→ This thesis attempts to determine if an international comparison of nominal military wages can provide insight into the problem of retaining mid-career officers, noncommissioned officers, and petty officers in the U.S. military.

The analysis indicates that United States' noncommissioned officers and petty officers are being compensated relatively less than their foreign counterparts but this does not hold for officers. However, because other occupational choice factors are interrelated with compensation, monetary compensation is not the only determinant affecting retention. The relatively higher U.S. officer compensation levels may be insufficient to offset the possibly greater perceived disutility associated with U.S. military service, or U.S. officers may have better opportunities in the civilian sector than their foreign counterparts. The relative cost-effectiveness of other policy variables than compensation may be worth analyzing.

↖

TABLE OF CONTENTS

I.	INTRODUCTION -----	11
A.	THE RETENTION PROBLEM -----	11
B.	OCCUPATIONAL CHOICE: A THEORETICAL DISCUSSION ---	12
	1. Nonpecuniary Determinants -----	16
	a. Stability -----	16
	b. Risk -----	17
	c. Separation and Length of Workday -----	17
	d. Job Satisfaction -----	18
	e. Recruit Deficiencies -----	18
	2. Direct and Indirect Compensation -----	19
C.	THE STUDY OBJECTIVE -----	23
D.	SCOPE OF THE STUDY -----	25
II.	AN INTERNATIONAL COMPARISON -----	27
A.	COMPLICATING ISSUES -----	27
	1. Cost of Living Variations -----	27
	2. Mixed Versus All-Volunteer Procurement Systems -----	28
	3. Unique Features of the Various Compensation Systems -----	29
	a. Canada -----	30
	b. Denmark -----	31
	c. France -----	32
	d. Federal Republic of Germany -----	33
	e. Norway -----	34

f. United Kingdom -----	34
g. Conclusions -----	35
4. Differences in Mission and Attitudes -----	37
a. Reassignments -----	37
b. Defense Attitudes -----	38
B. CONCLUSIONS -----	39
III. ANALYSIS -----	40
A. ASSUMPTIONS AND LIMITATIONS-----	40
1. Occupational Choice -----	41
2. Conscription -----	41
3. Tax Rates -----	42
4. Exchange Rates -----	42
5. The Data -----	42
6. The Comparison Bases -----	45
B. METHODOLOGY -----	47
1. Absolute Dollar Analysis -----	47
2. Ratio Analysis -----	49
C. ANALYSIS AND FINDINGS -----	50
1. Enlisted Comparison -----	50
a. Absolute Dollars -----	50
b. Ratio of Enlisted Wages to Average Gross Income of a Typical Worker -----	50
c. Ratio of Enlisted Wages to Per Capita Gross Domestic Product -----	56
2. Regular Officer Comparison -----	56
a. Absolute Dollars -----	56
b. Ratio of Regular Officer Wages to Average Gross Income of a Typical Worker -----	61

c. Ratio of Regular Officer Wages to Per Capita Gross Domestic Product -----	61
3. Pilots Comparison -----	66
IV. CONCLUSIONS -----	73
A. ENLISTED PERSONNEL -----	73
B. REGULAR OFFICERS AND PILOTS -----	74
C. AREAS FOR FURTHER STUDY -----	75
1. "X" Factor -----	76
2. Less Strict Military Discipline -----	76
3. Overtime -----	76
4. Reduce Number of and Cost of Moves -----	76
5. Pay Negotiations -----	77
6. Officer Education -----	77
7. Retirement Policy -----	77
D. SUMMARY -----	78
LIST OF REFERENCES -----	80
INITIAL DISTRIBUTION LIST -----	83

LIST OF TABLES

TABLE

I.	Direct Compensation, Indirect Compensation, and Fringe Benefits (U.S.) -----	20
II.	Pay Grade and Rank Conversion -----	44
III.	Comparison Bases -----	46
IV.	Enlisted Pay in Absolute Dollars -----	51
V.	Ratio of Enlisted Pay to Average Gross Earnings Per Typical Worker -----	54
VI.	Ratio of Enlisted Pay to Per Capita Gross Domestic Product -----	57
VII.	Regular Officer Pay in Absolute Dollars -----	59
VIII.	Ratio of Regular Officer Pay to Average Gross Earnings Per Typical Worker -----	62
IX.	Ratio of Regular Officer Pay to Per Capita Gross Domestic Product -----	64
X.	Officer Pilot Pay in Absolute Dollars -----	67
XI.	Ratio of Officer Pilot Pay to Average Gross Earnings Per Typical Worker -----	69
XII.	Ratio of Officer Pilot Pay to Per Capita Gross Domestic Product -----	71

LIST OF DRAWINGS

FIGURE

1.	Retained Personnel as a Function of Direct Compensation -----	14
2.	Retained Personnel as a Function of Nonpecuniary Benefits -----	14
3.	Enlisted Pay in Absolute Dollars -----	52
4.	Ratio of Enlisted Pay to Average Gross Earnings Per Typical Worker -----	55
5.	Ratio of Enlisted Pay to Per Capita Gross Domestic Product -----	58
6.	Regular Officer Pay in Absolute Dollars -----	60
7.	Ratio of Regular Officer Pay to Average Gross Earnings Per Typical Worker -----	63
8.	Ratio of Regular Officer Pay to Per Capita Gross Domestic Product -----	65
9.	Officer Pilot Pay in Absolute Dollars -----	68
10.	Ratio of Officer Pilot Pay to Average Gross Earnings Per Typical Worker -----	70
11.	Ratio of Officer Pilot Pay to Per Capita Gross Domestic Product -----	73

ACKNOWLEDGMENTS

I am grateful to the United States Army for providing me the opportunity to attend the Naval Postgraduate School.

This thesis would not have been possible without the cooperation of various U.S., Canadian, and European defense agencies, military attaches, and compensation analysts who so graciously provided the research material. A special thanks is due Professor Ragnhild Sohlberg of the Naval Postgraduate School for her patient, professional, and enthusiastic guidance throughout the preparation of this study.

Any errors of commission or omission which may appear in this document are my sole responsibility.

I. INTRODUCTION

This study examines the problem of retention of mid-career officers, noncommissioned officers, and petty officers in the U.S. military. It focuses on one aspect of the problem pay. Several nationally acclaimed articles have recently been published, bringing public attention to the monetary plight of this category of military personnel as compared to their counterparts in the private sector [1, 2, 3]. This study focuses on another method of examining the problem. Specifically, it attempts to determine if an international comparison of nominal wages of military personnel reveals that the United States' relatively greater manpower problems might result from lower compensation levels, relatively speaking, than observed in other nations.

A. THE RETENTION PROBLEM

The U.S. Army is short 7,000 noncommissioned officers -- most of them in infantry, artillery, and armor-combat specialties. The Navy needs 20,000 petty officers, and 15,000 of the unfilled jobs are sea billets - at a time when the ships of the Sixth and Seventh fleets are spending 20 to 25 percent more time at sea; worse still, the Navy will soon need 10,000 more petty officers to staff the 50 to 60 new ships that will enter the fleet by 1985. Even the glamorous Air Force is having trouble retaining pilots, computer specialists and other skilled men and women who are leaving for jobs in the private sector. Between 1975 and 1979, third hitch re-enlistments plummeted by 20 percent [3:52].

The statistics quoted above paint a dismal picture of the plight of the alleged "backbone" of the armed services, the mid-career noncommissioned officers (NCOs) and petty officers. Mid-career officer ranks have been hit hard as well. The Department of Defense is faced with retention rates for pilots in the Navy and Air Force that are less than half the desired number; the Navy is having great difficulty in retaining adequate numbers of nuclear submarine and surface warfare officers; and the Air Force cannot keep the necessary number of engineers and navigators [1]. These departing officers, NCOs, and petty officers are a mainstay in the services, providing the skills and experience necessary to operate highly technical equipment and also the main ingredient for successful military operations, namely leadership. These shortages are based upon peacetime requirements, not the even more critical wartime levels.

The peacetime active force problem is not one of raw numbers. As of March, 1980, the four services had 2,032,000 men and women volunteers in uniform, 96% of objective [2]. The problem for the armed services is retention of the lieutenants, captains, majors, NCOs, and petty officers to operate and maintain complex equipment as well as train and lead the new enlistees and junior officers.

B. OCCUPATIONAL CHOICE: A THEORETICAL DISCUSSION

Occupational choice, in economic terms, has to do with the determination of why some occupations provide higher

earnings than others and what determines the allocation of time to different occupations [4]. To put it simply, why do people choose one particular occupation over another?

In economics, the law of supply says that the quantity supplied of a product usually varies directly with its price, assuming that all other things remain the same [5]. In discussing the supply of career military personnel, the "other things" that may have an influence in determining supply are nonpecuniary factors such as job stability, risk, separation, length of workday, job satisfaction, and quality of non-careerists. Price would take the form of wages received. Figures 1 and 2 illustrate the points to be made.

Figure 1 illustrates, other things remaining the same, how retention is related to direct compensation. As direct compensation changes from level C_0 to C_1 to C_2 , there is a corresponding movement up and down the supply curve, signifying an increase or decrease in the quantity supplied.

Figure 2 illustrates, direct compensation remaining constant at level C_0 , how changes in other factors affect the location of the supply curve, and hence, retention. Assume Q_0 to be the normal state. If job satisfaction, for example, is perceived as increasing, the supply curve may shift to the right, providing an increase in supply to Q_1 . If job satisfaction is perceived as decreasing, then the supply curve may shift to the left, causing a decrease in supply to Q_2 . This paper will not address another phenomena

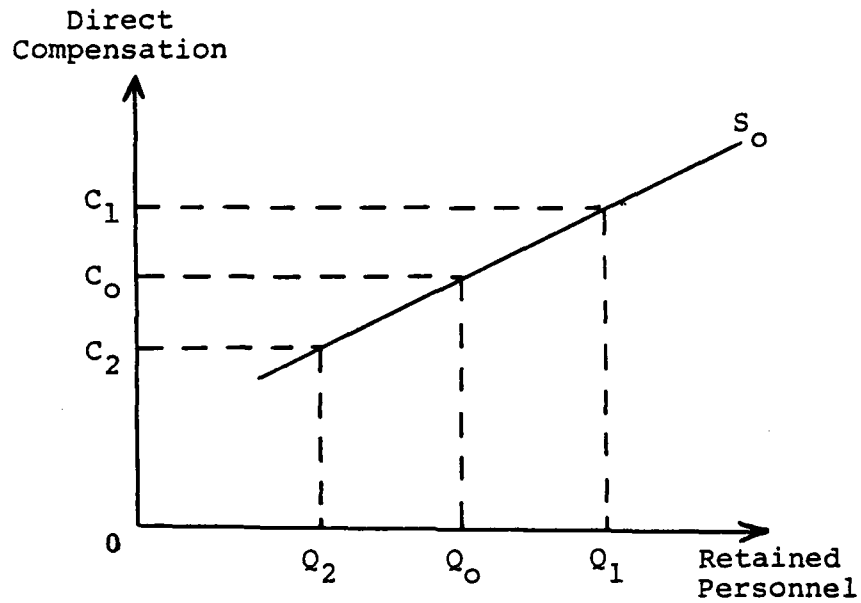


FIGURE 1. Retained Personnel as a Function of Direct Compensation

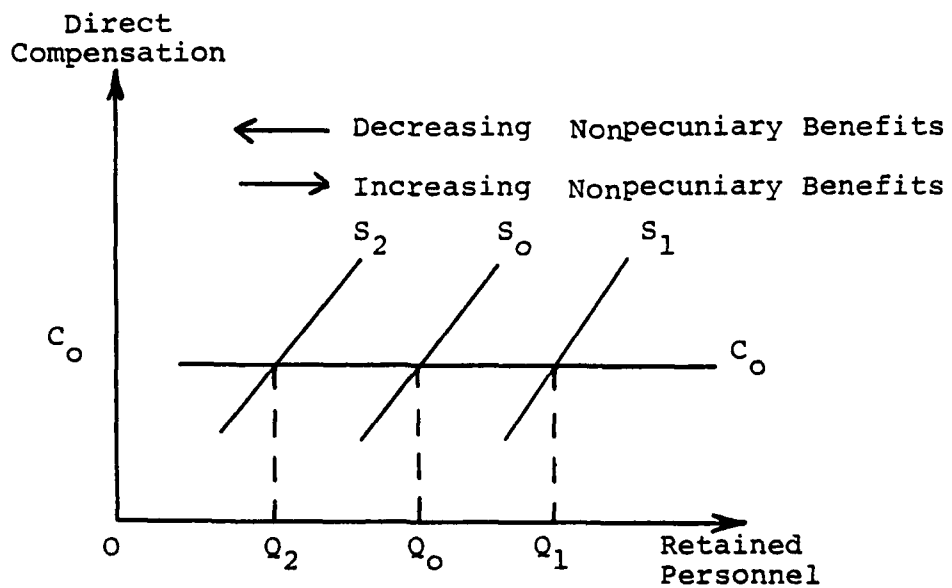


FIGURE 2. Retained Personnel as a Function of Nonpecuniary Benefits

of the supply curve, changes in the slope, or wage elasticity, of the curve, i.e., the responsiveness of retention to a change in direct compensation.

Supply of retained careerists, in this study, is a function of direct compensation, stability, risk, separation, length of workday, job satisfaction, and recruit deficiencies. All but direct compensation will shift the supply curve, i.e., determine how many are available at any/all compensation level(s).

Wage rates vary from occupation to occupation and also provide various levels of satisfaction (utility) to the worker. Thus, an individual will put up with uncomfortable conditions if provided a relatively high salary which permits him to obtain material goods to offset the disutility endured on the job. In contrast, an individual may be willing to work for a fairly low wage, if offset with job satisfaction, e.g., a social worker [6].

Investment in training must also be considered in a discussion of occupational choice [7]. Some occupations require large investments in training while others require much smaller investments. Mansfield uses the example of a physicist who must spend about eight years in undergraduate and graduate training. Each year training expenses are incurred for books, tuition, and living, and he foregoes the income that he would make if he were to work rather than go

to school. The physicist is making an investment by incurring these expenses and foregoing the income he could be receiving instead of studying. To make a return on his investment, the difference in wages or in utility between what he makes as a physicist and what he would have made without this training must be sufficient to make up for the physicist's investment in the extra training.

From the above it can be seen that an individual, in choosing an occupation or changing from one occupation to another, is influenced by a variety of factors. To understand why so many officers, NCOs and petty officers are leaving the U.S. military establishment, a discussion of some factors which can affect an individual's decision to remain in or leave the service is required.

1. Nonpecuniary Determinants

The serviceman may see alternatives or features of employment outside the military which are very attractive or unattractive to him, causing him to remain in or depart military service.

- a. Stability

With the possible exception of the Soviet Union, the United States has more military personnel, spread over a wider area of the world, than any other country. U.S. military personnel are extremely mobile, shuttling from one military installation to another and rotating between Europe and Asia. This rather continuous reassignment policy may be

perceived as a disruption of family life, may force the family to live in areas which are not appealing in terms of ethnic, social, political, geographic, or economic features. Consequently, "disutility" may cause an individual to transfer to an occupation which removes the source of disruption.

b. Risk

Military service, because of its commitment to "protect and defend the government of the United States against all enemies, foreign and domestic" (phrase from Oath of Enlistment), does contain an element of risk. In the event of war, there is always the possibility that a soldier may be killed, wounded or captured. Therefore, civilian jobs may look relatively more attractive.

c. Separation and Length of Workday

The idea of repeated, lengthy separation from family and friends is not appealing to most servicemen. For example, the USS Nimitz recently returned to her homeport after a nine-month cruise, including 144 consecutive days at sea [2]. With the shortages of officers and petty officers to man Navy ships, Navy personnel most often face such cruises on a "back to back" basis, with little time ashore with their families. Army, Air Force, and Marine personnel often are assigned to tours of duty in countries such as Korea and Japan (Okinawa) for up to a year without being accompanied by their families. Those remaining at stateside installations

are often expected to work in excess of 40 hours per week to accomplish their mission. No matter, the serviceman often finds himself isolated from family and friends.

d. Job Satisfaction

Budget constraints and soaring fuel costs have severely limited the quality and quantity of training and work that can be accomplished by the services. For example, pilots unable to fly the required number of hours needed to maintain proficiency as well as to satisfy their love of flying. Maintenance specialists lack spare parts to properly service and maintain equipment, or equipment on hand is so old it is impossible to maintain properly [2].

e. Recruit Deficiencies

In recent years there has been a marked decrease in the number of recruits entering the service with some college experience, as well as a drastic drop in recruits in the highest mental category, and an accompanying increase in the number of recruits in the lower mental categories [2]. Career soldiers and sailors find it is difficult or impossible to train lower quality recruits to satisfactorily handle the increasingly complex equipment. Once trained, many question the ability of some recruits to retain their skills long enough to utilize them on the job. This general distrust of the new recruits' abilities leads to dissatisfaction among career personnel.

"Old-line Army men complain that the system has been 'gentled' to make life easier for volunteers" [3]. The gist of the complaint is that when the today's enlisted soldiers encounter a tough situation they will not be able to "hack it".

2. Direct and Indirect Compensation

The occupational choice factors discussed above are largely nonpecuniary in nature. However, all have been cited at various times by officers, noncommissioned officers and petty officers as reasons for leaving military service. Economic theory says that if there is a shortage of labor in a given category then wage rates will rise in order to attract and retain workers significantly to offset job disadvantages. This being the case, it is necessary to discuss compensation as a factor in occupational choice. Direct compensation, indirect (supplemental) compensation, and fringe benefits are the three basic categories of compensation [6]. A complete list of U.S. compensation is found in Table I.

Direct compensation is the payment for the performance of an individual based on the amount of time worked (hours, weeks, months, or years). In the U.S. military, direct compensation is generally considered to include basic pay, quarters and subsistence allowances (cash and in kind), and tax advantage. Tax advantage is considered a form of

TABLE I
DIRECT COMPENSATION, INDIRECT COMPENSATION,
AND FRINGE BENEFITS (U.S.)

DIRECT PAY

Basic pay	Special and continuation pay
Quarters allowance	for medical officers
Subsistence allowance	Pay for sea duty and duty
Tax advantage	at certain places
Submarine pay	Flight pay
Demolition pay	Parachute jump pay
Proficiency pay	Reenlistment bonus
Pay for diving duty	Enlistment bonus
	Variable housing allowance

INDIRECT PAY

Retired pay	Medical care
Veteran's education	Social security
Commissary and exchange	Separation pay
privileges	Mortgage insurance premiums
Death gratuity	Overseas station allowance
Clothing allowance	Life insurance
Dislocation allowance	
Burial costs	

FRINGE BENEFITS

Unlimited sick leave	Weekend passes
Free legal services	Space available travel on
Training for future	military aircraft
employment	

Source: Binkin (1975), Table 2.5

direct compensation because neither quarters nor subsistence allowances are taxable. The magnitude of the tax advantage is equivalent to the amount of additional income required to ensure the same take-home pay if the allowances were taxable [8]. Other forms of direct compensation include special and premium pays such as bonuses, proficiency pay, flight pay, parachute jumping pay, demolition pay, and diving pay.

Indirect compensation includes actual payments the individual is entitled to by law (entitlements) and other non-cash quantifiable benefits. Entitlements include family separation allowance, clothing allowance and dislocation allowance. Non-cash quantifiable compensation includes commissary and exchange benefits, medical care, retirement pay and many others.

Fringe benefits include benefits for which no monetary payment or cost is made or incurred. They include unlimited sick leave, weekend passes, free legal services, and space available travel on military aircraft.

When reviewing compensation as a factor in occupational choice, the soldier (worker) also considers nominal income and real income. Nominal income consists of the actual amount of money received for work done. Real income is the purchasing power of money income as measured by the quantity of goods and services it can buy. Money income may be quite different from real income, since real income is determined

not only by money income but also by the general price level. And most importantly, it is the perceived value of indirect pay and fringe benefits which has direct bearing on an individual's occupational choice.

Looked at in total, military compensation components appear to cover a rather broad spectrum of occupational categories, providing extra pay for those who perform hazardous, arduous duties, those who are separated from their families, and a myriad of other types of compensation. Yet career officers, NCOs and petty officers are still leaving. An attempt is being made to compensate for the disadvantages of military service and attract and retain workers in accordance with the economic model, but still, "money is at the root of the manpower problem in all three services. Adjusted for inflation, the income of armed forces personnel has dropped up to 20 percent since 1972. The discrepancy is worse where it hurts the most: in the 25 to 34 year old group that contains precisely the trained personnel the services need most desperately to retain [3:52]."

The amount of pay is clearly a major issue. While departing personnel often mention non-monetary factors as reasons for leaving, virtually all cite lack of pay as a major factor. Under current law military pay is presumably set according to the so-called comparability principle, originally intended to keep Federal pay (military and

civilian) competitive with the civilian sector. The problem is that military pay is not in fact linked directly with private sector wages and salaries, but is tied through a set linkages to the General Service system. Thus, while attempting to compete within the civilian marketplace for manpower, built-in limitations in the military pay system fail to overcome the negative occupational factors with enough dollars to retain required personnel [9].

Congress and President Carter recently passed and approved an 11.7 percent pay raise for military personnel and a 9.1 percent raise for civilian personnel. While these raises constitute a move in the right direction, the services are still playing "catch up" to 1972 levels, and there is a long way to go before true comparability is reached [10]. In the meantime it seems likely that highly trained personnel will continue to exercise their option to look for compensation commensurate with the training and education they have received through their military association.

C. THE STUDY OBJECTIVE

It is apparent from the literature that the pay of these departing personnel is at least not perceived as commensurate with what they can receive in the civilian sector. Examples commonly used are the Navy chief petty officer, E7, with 17 years of service who makes the same salary as a janitor on union scale and puts in twice as many hours; or the Navy captain who earns \$43,218 annually, including allowances for

food and quarters but his counterpart, a Merchant Marine Master with his customary overtime can make \$66,450 [1, 2]. The lack of comparability to the civilian sector in the United States military has been established [1, 2, 3, 11].

Do U.S. allies have retention problems? There is little evidence suggesting that there are as serious military manpower shortages in other industrialized nations. However, shortages do exist in certain functions. For example, a recent article in the Norwegian FORSVARETS FORUM indicated that Norway is short about 60 pilots, particularly career pilots. The pilot retention problem is explained by the swings in demand for pilots by the Scandinavian Airline System (SAS). When SAS demand is high, military pilots are lost to higher wages and an extended lifetime of flying with SAS [11]. Military pilots only fly until the age of 40-45 and then must resign themselves to administrative duties and forego supplementary flight pay. Defense officials in the Federal Republic of Germany have stated that the German military suffers some retention problems in technical areas, but apparently not anywhere near the magnitude of the U.S. problem [11]. In 1979, the United Kingdom authorized two military pay raises, the first 24.2 percent, the second 9 percent. In April 1980, the Pay Review Revision Board authorized another increase ranging from 14.5 to 20 percent [12]. The British belief is that "unless there is a continuing assurance that armed forces pay will be kept broadly

in line with pay in civilian life at equivalent levels, the Services' ability to recruit and in particular, to retain will once again be put in jeopardy [13:1]." This is an indication that United Kingdom forces may have experienced retention problems.

Apparently Canada, Denmark, France, the Federal Republic of Germany, Norway, and the United Kingdom do not share the United States' serious career military personnel retention problem. The obvious question is "Why?" It has been shown that pay is a large factor in the U.S. retention problem. Are the armed forces of the countries mentioned relatively better paid than U.S. forces? Do they receive higher absolute pay in dollar equivalents? Are they relatively better off than the average typical worker compared to their U.S. counterparts?

The objective of this study is to determine if an international comparison of nominal wages of military personnel, indicate that the United States' relatively greater manpower problems may at least in part result from the U.S. military being compensated less, relatively speaking, than their foreign counterparts.

D. SCOPE OF STUDY

This thesis limits itself to deal only with an international comparison of wages. It is recognized that this may constitute but one part of the retention problem in the United States military. Even though interrelated, an analysis of other occupational choice factors is seen as outside the

scope of this study as they are worthy of separate thesis topics.

However, even this apparently limited scope is not simple. The complications of international pay comparisons will be addressed in Chapter II. Assumptions, methodology, and analysis will be detailed in Chapter III. Chapter IV will outline conclusions that can be made regarding the U.S. retention problem after analyzing just one variable affecting occupational choice as well as any recommendations regarding future studies in this area.

II. AN INTERNATIONAL COMPARISON

This thesis compares the nominal wages of military personnel in Canada, Denmark, France, the Federal Republic of Germany, Norway, the United Kingdom, and the United States. Shortly after beginning this project, it was realized that a myriad of problems exist which can stifle and/or affect the validity of the comparison. These problems do not have to be addressed directly but they must be mentioned so that any derived conclusions are considered in proper perspective. This chapter contains a brief review of the various complications which can affect an international comparison.

A. COMPLICATING ISSUES

1. Cost of Living Variations

The idea that the cost of living varies from state to state and from country to country has become an accepted fact. The cost of living, and therefore real salary levels, are significantly affected by geographical location, population, tax policies, social welfare, availability of national health insurance, and compensation policies and methods. The concepts of nominal income and real income must be referred to again. For example, a person living in Washington, D.C. and another person living in Manhattan, Kansas, may have identical nominal incomes, yet the cost of living in

Kansas is lower than in Washington, D.C. The Kansan has a much higher real income. The same idea can be applied to international comparisons. An officer in Canada may earn the equivalent of \$20,000 annually while his counterpart in the Federal Republic of Germany earns only \$12,000. Because of cost of living variations, it is conceivable that the German officer may have the higher real income. Exchange rates were used to convert the various national wages to dollars. However, exchange rates rarely, if ever, fully reflect price variations or the purchasing power of income. Therefore, this study was unable to correct for international price variations, and this limitation should be kept in mind when interpreting the data.

2. Mixed Versus All-Volunteer Procurement Systems

Only three of the countries being compared, Canada, the United Kingdom, and the United States, rely solely on volunteers for their armed forces. The others, Denmark, France, the Federal Republic of Germany, and Norway rely on a conscription or "draft" system to varying degrees in order to maintain military manpower strengths. While conscription countries need not be concerned about compensation as a factor for attracting personnel to the military initially, they do have to be concerned about attracting and retaining at least a cadre of officers and noncommissioned officers. In that respect all countries are alike. However, a fairly

recent comment by Janowitz regarding the shift to an all-volunteer concept in the U.S. may be applicable:

From the point of view of the contemporary military, the all-volunteer concept has eliminated the initially reluctant conscript who decided while in service to make the military a career. This development may point up a crucial loss in dedicated personnel [14:10]."

The all-volunteer concept thus narrows the base from which career soldiers as well as officers are drawn, since conscription also motivates individuals who ordinarily would not consider military service to pursue a commission and possibly a career. Dismissing conscript career possibilities it is also true that, "assuming that the conscripts get an overall favorable impression of the military, the high participating rate that conscription can provide fosters necessary understanding of and support for the military [15:7]." This aspect of conscriptive service could have positive or negative impact on wages for the career military, depending on the experience of each individual. Much of this discussion harks back to the non-monetary factors of occupational choice which are not to be considered here. Nonetheless, it emphasizes a possible effect or distortion which could occur when comparing military incomes under such different systems of procurement as the all-volunteer and conscription concepts.

3. Unique Features of the Various Compensation Systems

Each country has the same basic compensation components, that is, direct compensation, indirect compensation,

and fringe benefits. It could be argued that the systems of each are pretty much the same, make an assumption to that effect, and dismiss the point. However, analysis of the data received in developing this study reveals that each country's compensation system has at least some unique features which set it apart from that of the United States. Data came from various sources, and in the case of some countries, it is certain that the information is not complete, nor can the accuracy of all the data be confirmed. Still it is apparent that there are differences which should be noted and possibly considered as the analysis develops in the following chapters. To avoid redundancy, only those features which are different from the U.S. compensation system will be mentioned.

a. Canada

Pay for Canadian military personnel is based on a salary system linked to Public Service employee salaries. However, the fact that military service and public service jobs are not directly comparable or perfectly interchangeable is recognized through the inclusion of an "x" factor in military salaries. The "x" factor is included to acknowledge the disutilities of military service to which all members are exposed. Examples of disutilities include risk, separation, stability, and job satisfaction. Presently the "x" factor is four percent [16].

Officers and enlisted ranks pay scales are subdivided into incentive pay categories to recognize increased effectiveness as time in rank increases. These within grade increases are not automatic, but are paid at the discretion of the servicemember's commanding officer [17].

Servicemen required to move to a new duty station because of official orders are reimbursed to the extent that they neither gain nor lose money. Transportation costs as well as all accomodation costs are reimbursed. This includes interim lodging and meals at either or both ends of the journey for the period the family is separated from furniture and effects. If a servicemember is required to buy or sell a house as a result of an official move, real estate costs and legal fees are reimbursed [16].

The Canadian retirement program is contributory, with 7.5 percent of pay deducted each pay period. Upon retirement or departure from active service, the servicemember can choose an immediate annuity, a deferred annuity, or a return of contributions with interest at four percent, depending on years of active service [18].

b. Denmark

The Danish military is "functionally organized." The American term is unionized. Within the Ministry of Defense, a separate staff provides a point of contact with the military unions. The Chief of Cooperation deals with 52 different unions. This plethora of organizations includes

unions for general officers, other officers, NCOs, doctors, nurses, and pilots. Some of the benefits claimed include premium pay for overtime (more than 40 hours per week), weekend or holiday duty, a union dues checkoff system, union activities permitted during duty hours and union newspapers and magazines are permitted. There are no restrictions on hair or beard style.

Military pay negotiations parallel civilian pay negotiations every 1-2 years, and the military receives benefits comparable to those achieved in the public sector [19]. Through negotiation it has been possible to obtain a selective wage system that rewards special qualifications. In the Danish armed forces no "employee" can be discharged without previous consultation with the appropriate functional organization [20]. Retirement programs also vary from one functional organization to another [20, 21].

c. France

French military personnel have a contributory retirement system with six percent of base pay retained by the government. A commissioned officer may request retirement after 25 years of active duty. A noncommissioned officer may do so after 15 years of active duty. In addition to retirement pension, each retiree receives an additional allowance for raising three or more children over the age of 16. During their years of active duty, military personnel

receive a family pay supplement corresponding to the number of children they have. Allowances are also paid for teaching, participation in the work of various juries and examining boards, and special police functions [22, 23]. There is no indication that French military pay scales are tied to the private or public sector.

d. Federal Republic of Germany

The military basic pay scale is the same as that for Civil Service employees. Also included is a tax-free children's allowance [24]. All military personnel who are required to work on Sundays, legal holidays and Saturdays after 1300, and between 2000 and 0600 on other days are paid overtime pay. German military personnel receive a special Christmas bonus, a 13th full month's pay [17].

The retirement system in noncontributory and entitlement to retirement pay is based on length of service, age, and grade. Officers and enlisted personnel are selected for career status between the 2d and 15th year of service. Once career status is granted, the servicemember has a lifetime contract which includes full pension eligibility. No voluntary retirement is permitted; a member must serve to the mandatory retirement age for the grade attained. Examples of mandatory retirement ceilings are: all enlisted grades and officers through captain, age 52; major, age 54; and lieutenant colonel, age 56 [17,25].

Functional organizations are active but they do not participate and bargain in the pay adjustment process [24].

e. Norway

Military pay is linked to the civil service salary scale; however, this scale is supplemented by negotiated recognition of the difference between civil and military service. Other allowances are paid for overtime, unusual working hours, and extra dirty work [26].

All Norwegians put 2.4% of their lifetime salary into a national social services fund. The military have a separate retirement system from the state employees. Servicemembers can retire at age 60 with 66 2/3 percent of base pay and allowances. At age 65, they can also collect a certain percent from the general national fund as well. The services deal directly with the Ministry of Defense on wages, with no intervention by functional organizations [26].

All Norwegians are covered by national health care programs.

f. United Kingdom

The pay system is a military salary concept tied to the private sector providing the comparable salaries for work requiring similar levels of skill, experience, and responsibility.

In addition, a military "x" factor is paid all personnel to recognize the uniqueness of military service. The present rates are 10 percent for men and 5 percent for women. The British retirement system is non-contributory. There is a policy for the refund of expenses associated with the purchase or sale of property due to official orders [17].

g. Conclusions

Of the features mentioned previously, the "x" factor, the overtime policies of Denmark, Germany and Norway, and salaries tied to public service vice the private sector are probably most important.

Canada and the United Kingdom use the "x" factor to recognize the disutilities of service to which all service members are exposed. Factors considered include some of the same or similar occupational choice factors discussed in Chapter One. Namely, acceptance of a strict code of discipline, the inherent risk in the event of war, liability for service in any part of the world, and a requirement, if necessary, to work long hours without pay. Norway apparently recognizes these factors as well with its military allowance and, Norwegian volunteers in United Nations' forces receive extra pay as well as a tax advantage. The point is that Canada, Norway, and the United Kingdom directly acknowledge these occupational choice factors, the United States does so indirectly with separation pay, hostile fire pay, and dislocation allowance, for example.

The overtime policies of Denmark, Germany, and Norway are also an important consideration. Whether the overtime is taken in the form of extra leisure time or in monetary supplements, pay per workhour increases. Servicemembers in these countries know that extra hours of duty will be rewarded. In the United States and France, more hours on the job simply mean less leisure time. There is no monetary or alternate leisure reward. Canada and the United Kingdom officially recognize extra hours worked with the "x" factor, although a speculator may be correct in surmising that the average servicemember forgets all about "x" factor when required to work extra hours. At any rate, it would appear that overtime compensation may be a significant factor in occupational choice for servicemembers in those countries that have the policy.

Military salaries in Canada, Denmark, the Federal Republic of Germany, and Norway are tied directly to public service salaries. In these countries, servicemembers know that they can move with relative ease from the military sector to public service, with little, if any, loss of pay and benefits. Defense personnel may feel that if they ever grow to dislike military life, there will be no great loss in transferring to public service. The Federal Republic of Germany may be an exception, with its "career" retirement policy. Still, such perceptions may be a significant factor in occupational choice.

4. Differences in Mission and Attitudes

Except for Canada, none of the countries included in this study has a comparable national territory as large as the United States to protect. Further, because of extensive defense commitments/treaties, the United States has an image as the world's peacekeeper to maintain. The United Kingdom and France also have global military obligations, but not to the extent of U.S. forces. These factors and their effects on the past, present, and future must be considered as military pay is analyzed.

a. Reassignments

It is possible for military personnel in Denmark, Norway, and the Federal Republic of Germany to be reassigned several times without moving their families, because of the relatively small geographic area occupied by those countries. In Canada and the United Kingdom, where reassignment may involve a family move, real estate and legal fees and transportation costs are fully reimbursed [16,17]. However, in the United States,

Each year military people who are transferred must spend over \$1 billion out of their own pockets to accomplish the move. The average cost to an E-7 with three dependents to move himself and his family 1500 miles is approximately \$3,835. (This does not include the costs of buying and selling a home or advance house hunting trips.) Presently he is reimbursed only \$644 by the government and thus must come up with over \$3000 to defray the cost of a move which is undertaken for the good of the service. This amount represents over 20 percent of his annual compensation [1:10].

U.S. military personnel are extremely mobile, moving within the nation as well as to overseas installations. Very likely, a household move is involved when a U.S. servicemember is transferred. Clearly, moves are expensive, even if the example cited above overestimated the cost. This additional expense cannot be discounted in comparing U.S. pay to nations whose military personnel do not have the same problem.

b. Defense Attitudes

There is no military threat poised at the borders of the United States and Canada. Certainly, U.S. and Canadian forces are prepared to defend their homeland, but they are mainly committed to do this indirectly through world-wide defense commitments. It is possible that many servicemembers perceive these global defense commitments as "not their problem." Likewise, since there is no direct threat close to home, national defense may be considered outmoded. In contrast military forces in Denmark, Norway, and the Federal Republic of Germany are primarily concerned with territorial defense. The United Kingdom and France are expeditionary to a degree, but also have territorial concerns. They all have a real military threat poised nearby. All suffered the direct effects of World War II on their soil. It is possible that these considerations may be a factor in retention.

National image of the military may be a retention factor. None of the countries have suffered through an involvement such as the United States did in Vietnam, with the resultant negative image of the military forces. The other nations are left with the positive attitude toward their military forces from World War II as well as from non-territorial involvement after World War II (Ireland, UN, colonies, etc.).

B. CONCLUSION

This chapter has identified and briefly discussed some of the complicating issues which can affect an international comparison. None will be addressed directly in this paper, but an awareness of them is important when comparing wages as one part of the retention problem in the United States.

III. ANALYSIS

This chapter compares military wage rates of Canada, Denmark, France, the Federal Republic of Germany, Norway, the United Kingdom, and the United States in three ways. First, wages are compared in terms of absolute dollars; second, as a ratio of military wages to the average gross earnings of a typical worker in each respective country; and third, as a ratio of military wages to the per capita gross domestic product of each country. The latter two methods allow relative comparison of the countries' wage rates, reducing the distortions between countries created by variations in cost of living and tax rates. Each mode is subdivided into enlisted, regular officer, and officer pilot categories. Despite the narrow scope of the study, full comparability of the data has not been achieved. Some of the reasons for this have been enumerated in the first two chapters. Others are stated as assumptions and limitations in this chapter, followed by sections on methodology, analysis, and findings.

A. ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations are made in studying wage comparability.

1. Occupational Choice

The nonpecuniary factors of occupational choice such as job stability, risk, separation, length of workday, job satisfaction, and quality of recruits will not be considered. Investment in training will also be ignored.

Direct compensation is analyzed; however, indirect compensation and benefits are not considered. Wages available for other nations are adjusted to resemble as closely as possible the typical U.S. military wage consisting of basic pay, quarters, and subsistence allowances. With the exception of flight pay in the officer pilot analysis, all other forms of direct compensation are ignored. For purposes of computing direct compensation, all ranks are considered to be married, with two children.

2. Conscription

Denmark, France, the Federal Republic of Germany, and Norway all rely on conscripts and volunteers as sources of manpower. The degree of conscription varies from near universal in Norway and France to selective in Denmark and the Federal Republic of Germany. A selective conscription system is one which has liberal deferment and exemption policies or where selection is done by lottery [15]. Conscript wages are not analyzed since they are generally lower than volunteer wages and not comparable to pay grades in the United States. Denmark and Norway are excluded from the enlisted analysis

because at the time of writing, little information was available to match enlisted (volunteer) grades to comparable grades in the United States. Therefore, only the enlisted pay grades of France and the Federal Republic of Germany are included, along with those of Canada, the United Kingdom, and the United States. Since France relies so heavily on conscription, French enlisted pay may not be comparable to other nations' pay.

3. Tax Rates

It is recognized that income tax structures vary from country to country. Also, some countries have a value-added tax on goods and services. However, only before-tax wages will be considered. Any tax advantage accrued because non-taxable allowances are included in wages will not be considered. These variations may cancel out when comparing military and civilian wages within a nation; however, they will affect international comparisons.

4. Exchange Rates

Foreign currency exchange rates in effect on September 21, 1980, will be used [27].

5. The Data

The governments are quite keen on amassing statistics. They collect them, add them, raise them to the nth power, take the cube root, and prepare wonderful diagrams. But you must never forget that every one of these figures comes in the first instance from the village watchman, who just puts down what he damn well pleases.

Sir Josiah Stamp
Inland Revenue Department
England

Wage and salary information obtained and used in this study come from a wide variety of sources so that uniformity is most probably not achieved. In some instances the data may have been "sanitized" or modified to reflect the respective analyst's interpretation. It is also possible that for some countries all forms of direct compensation were not provided. If so, for those countries, the military wages may be understated.

The military wage and salary data used for all computations is taken from 1980 pay scales. The U.S. data includes the recent 11.7 percent pay raise received by all military personnel. United Kingdom pay scales include three recent significant pay raises. In 1979, two pay raises were authorized, the first 24.2 percent, the second 9 percent. In April 1980, the British Pay Review Revision Board authorized another increase ranging from 14.5 to 20 percent [12]. Possible percentage pay increases for other nations are not known.

Pay grades of all nations are matched as closely as possible to corresponding U.S. Army grades. For the purpose of this study, career ranks will include pay grades E5 and above (enlisted) and O2 and above (officers). Pay grades and corresponding U.S. Army ranks are shown in Table II. All subsequent discussions of pay grades and ranks are based on Table II.

TABLE II
PAY GRADE AND RANK CONVERSION

<u>PAY GRADE</u>	<u>RANK (ARMY)</u>
E1	Private
E2	Private
E3	Private First Class
E4	Corporal
E5	Sergeant
E6	Staff Sergeant
E7	Sergeant First Class
E8	Master Sergeant
E9	Sergeant Major
O1	Second Lieutenant
O2	First Lieutenant
O3	Captain
O4	Major
O5	Lieutenant Colonel
O6	Colonel

Source: The Officer's Guide, 1968, Stackpole Books,
Harrisburg, PA

TABLE II
PAY GRADE AND RANK CONVERSION

<u>PAY GRADE</u>	<u>RANK (ARMY)</u>
E1	Private
E2	Private
E3	Private First Class
E4	Corporal
E5	Sergeant
E6	Staff Sergeant
E7	Sergeant First Class
E8	Master Sergeant
E9	Sergeant Major
O1	Second Lieutenant
O2	First Lieutenant
O3	Captain
O4	Major
O5	Lieutenant Colonel
O6	Colonel

Source: The Officer's Guide, 1968, Stackpole Books,
Harrisburg, PA

6. The Comparison Bases

This study develops ratios of military earnings to per capita gross domestic product and average gross earnings per typical worker in each country. Data for each category was obtained from the Organization for Economic Cooperation and Development [28,29]. Table III provides the actual amounts, by country for each comparison base.

The average gross earnings per typical worker is 1978 data brought up to 1980 levels through the use of an inflation index [30]. The typical worker is assumed to be married, with two children, working in a manufacturing industry [29].

The per capita gross domestic product is based on 1980 data. Since no adjustment was required, it may serve as a more consistent measure across nations than average gross earnings per typical worker. Review of Table III reveals the lack of uniform proportionality between the two bases across nations. This probably results from indexing the 1978 average gross earnings per typical worker as well as from variations in family size and the relative societal position of the manufacturing worker from nation to nation. For example, in France, average gross earnings per typical worker is 1.44 times per capita gross domestic product while in the United Kingdom it is 2.52 times per capita gross domestic product.

The two comparison bases suffer from some of the same data collection problems as did the military pay

TABLE III

COMPARISON BASES

<u>COUNTRY</u>	<u>PER CAPITA GROSS DOMESTIC PRODUCT</u>	<u>AVERAGE GROSS EARNINGS PER TYPICAL WORKER</u>	<u>RATIO, AVE. GROSS EARNINGS PER TYPICAL WORKER/ PER CAPITA GDP</u>
CANADA	\$ 8,740	\$15,286	1.75
DENMARK	10,950	21,625	1.97
FRANCE	8,850	12,701	1.44
FEDERAL REPUBLIC OF GERMANY	10,420	18,645	1.79
NORWAY	9,850	15,915	1.62
UNITED KINGDOM	5,530	13,939	2.52
UNITED STATES	9,660	15,446	1.60

Sources:

Gross Domestic Product: Ostry, Sylvia, "The World Economy in the 1970s and 1980s", OECD Observer, March 1980

Average Gross Earnings: "1978 Tax Benefit of a Typical Worker in OECD Member Countries," Organization for Economic Cooperation and Development, 1978. (Phone conversation with OECD Reference Librarian, Washington, D.C., 12 November 1980).

information. There is an absence of uniform, unambiguous definitions, and the scope of this study does not allow for investigating possible biases.

B. METHODOLOGY

In this study, international military wages are compared three ways. First, wages will be compared in terms of absolute dollars; second, as a ratio of military wages to the average gross earnings per typical worker in each respective country; and third, as a ratio of military wages to per capita gross domestic product of each country.

1. Absolute Dollar Analysis

A representative basic pay rate for each rank, by country, was determined. The selection of the proper point on each respective pay scale for comparison purposes posed a bit of a problem. The U.S. pay scales are based on time in service while the others are primarily based on time-in-grade, or-rank. It was decided to select the midpoint of time in grade for each rank in attempting to achieve a uniform comparison. Department of Defense staff officers assisted in providing a partial solution for making U.S. pay grades comparable [31,32]. However, another complication surfaced. The required time in service for promotion opportunities varies significantly from one service to another, particularly for enlisted personnel; i.e., the mid-point of time-in-rank does not always represent the average time-in-rank for each

country. The mid-point may be skewed to the right or left of the average, possibly resulting in over- or understatement of income in certain ranks and countries. For the United States, Department of Defense promotion statistics are used to determine the most representative comparison point for enlisted personnel. Since no overall Department of Defense promotion statistics were available for officers, Army statistics are used to represent all services.

Canadian and French basic pay rates were reduced by 7.5 and 6 percent respectively, since those countries have contributory retirement systems. A contributory retirement system requires the member to give up a portion of his pay as a contribution to his retirement plan. Denmark, the Federal Republic of Germany, Norway, the United Kingdom, and the United States have non-contributory retirement plans. Failure to reduce Canadian and French wages would result income being overstated.

Once the above adjustments were made, the appropriate allowances were added to basic pay in order to approximate the equivalent of U.S. basic pay plus quarters and subsistence allowances. The result, when converted to U.S. dollars, represents the absolute wage for each rank, by country.

The absolute dollar analysis is probably best used to compare wages between ranks within a particular nation. Any attempt to compare absolute dollar amounts between nations

without considering variations in inflation, purchasing power equivalents, and tax rates would have little validity and therefore little meaning.

2. Ratio Analysis

An international comparison of the ratio of military wages to average gross earnings per typical worker and to per capita gross domestic product reduces the complications of the absolute dollar analysis [33]. The ratios depict the relative position of military personnel within each nation, compared to the average typical manufacturing worker and to per capita gross domestic product. For example, the distortions resulting from international variations in inflation, purchasing power, and tax structure are greatly reduced. When the ratios are compared internationally, it is possible to examine the relative position of the military in each society and rank them accordingly.

To obtain the desired ratios for each country, the absolute dollar wages for each rank were divided by the per capita gross domestic product and by the average gross earnings of a typical worker. An example of the computation of the ratio of the wages of a French captain to per capita gross domestic product follows.

<u>ANNUAL PAY FRANCS</u>	<u>EXCHANGE RATE</u>	<u>ANNUAL PAY U.S.DOLLARS</u>	<u>PER CAPITA GDP, FRANCE</u>	<u>RATIO</u>
74,172	÷ 4.06	= \$18,269	÷ \$8,850	= 2.064

C. ANALYSIS AND FINDINGS

Subject to the limitations outlined in Chapter I and II as well as to the assumptions and limitations listed in this chapter, this section separately analyzes data for enlisted personnel, regular officers, and officer pilots.

1. Enlisted Comparison

As mentioned, the enlisted comparison only includes the countries of Canada, France, the Federal Republic of Germany, the United Kingdom, and the United States.

a. Absolute Dollars

Table IV and Figure 3 compare the enlisted pay grades of each country in terms of absolute dollars. As shown, the Federal Republic of Germany has the highest absolute dollar pay at all pay grades up to E9, where it is overtaken by the United States. The United States ranks approximately second, except in pay grades E3, E4, E5, and E6, where the United Kingdom and Canada move ahead. This is interesting because it is the departing mid-career E5s and E6s who are causing the greatest enlisted retention problem in armed forces of the United States. However, because of the distortions discussed earlier, these rankings should not be interpreted too strictly.

b. Ratio of Enlisted Wages to the Average Gross Earnings Per Typical Worker

The ratios of enlisted wages to the average gross earnings per typical worker are shown in Table V and Figure 4.

TABLE IV

ENLISTED PAY IN ABSOLUTE DOLLARS¹

RANK/ PAY GRADE	FEDERAL REPUBLIC OF GERMANY	UNITED STATES	UNITED KINGDOM	CANADA		FRANCE	
PVT/E1	\$13,973	\$ 9,610	\$ 9,283	\$ 5,899		\$ 4,546	
PVT/E2	14,365	10,298	9,884	6,132		5,116	
PVT/E3	15,100	10,561	11,210	8,820		7,204	
CPL/E4	15,960	12,008	11,237	13,955		9,883	
SGT/E5	17,268	13,808	13,980	14,283		10,867	
SSG/E6	18,447	16,403	17,162	15,718		11,631	
SFC/E7	20,162	18,812	18,021	17,523		Not Available	
MSG/E8	22,076	21,579	18,917	19,464		12,213	
SGM/E9	23,897	27,153	19,877	21,705		13,197	

Sources

Refer to List of References, entries 34, 35, 36, 16, 37.

¹Based upon 1980 pay scales for each country.

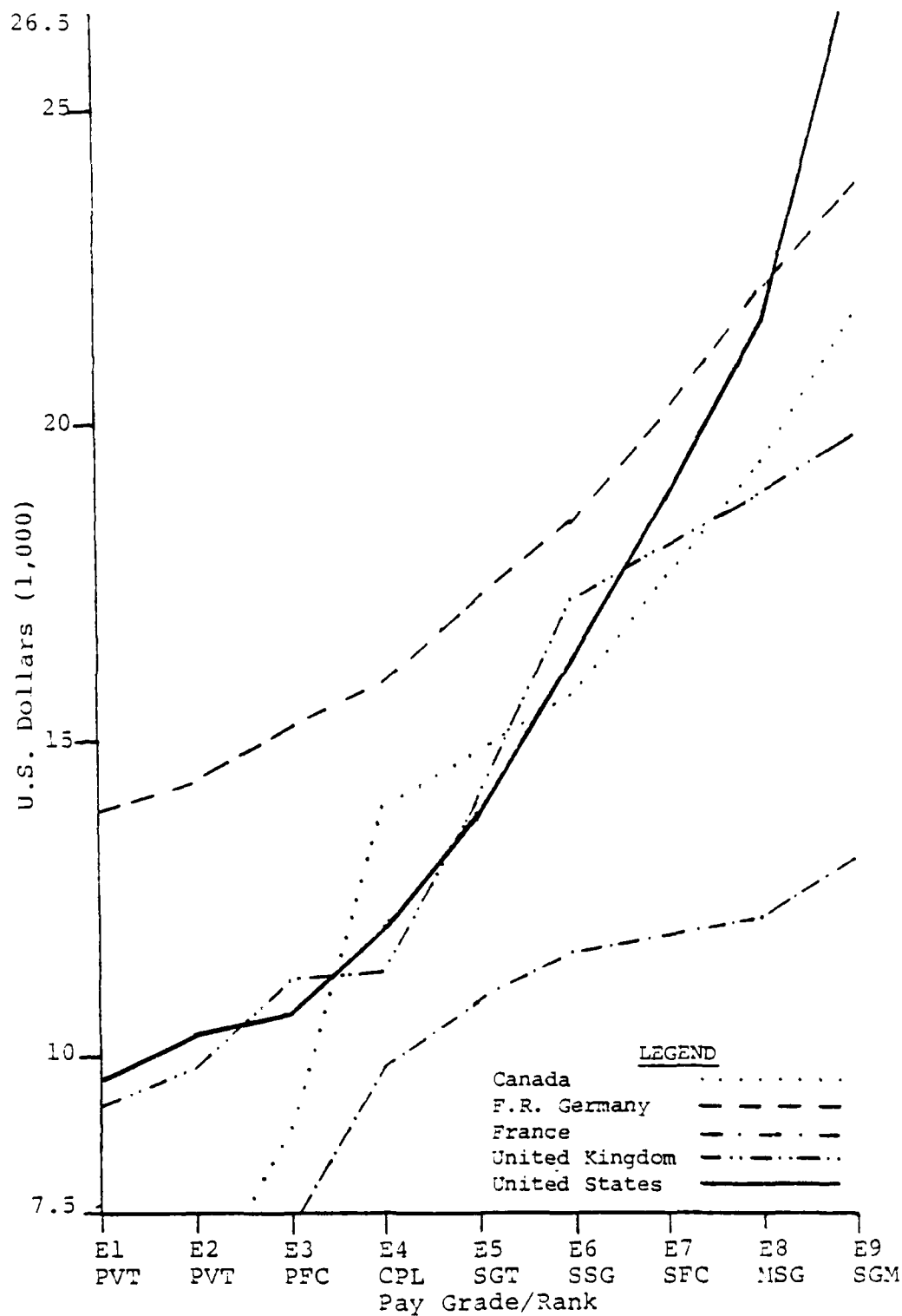


Fig. 3--Enlisted Pay In Absolute Dollars

Recall that the earnings base year is 1978, brought up to 1980 levels using inflation indexes. Analysis of these ratios allows international comparison of each rank relative to each nation's typical manufacturing worker. As expected, this method yields somewhat different conclusions than the absolute dollar method. The Federal Republic of Germany, overall leader in absolute dollars, leads only grades E1-E3 here, slipping to fourth in grades E6-E9; the ratio reaching 1 at E7, one rank higher than for the United States.

The United States ranks third in grades E1-E3; fourth in grades E4 and E5; second in grades E6 and E7; first in grades E8 and E9. The United States servicemember is relatively worse off than most of his foreign counterparts, in grades E1-E5; the years when a career decision or at least the first reenlistment decision is likely to be made. The United States is apparently not having a problem attracting first term recruits, but it may be that the salary is not sufficient to offset negative nonpecuniary factors at the time of reenlistment. However, this comparison does not help explain the retention problem in the more senior grades of E6 and E7. Here the United States is second only to the United Kingdom, yet apparently has a more severe retention problem than its allies. It is possible that the higher relative wage also here is insufficient to offset other factors of occupational choice.

TABLE V
RATIO OF ENLISTED PAY TO
AVERAGE GROSS EARNINGS PER TYPICAL WORKER

<u>RANK/ PAY GRADE</u>	<u>FEDERAL REPUBLIC OF GERMANY</u>	<u>UNITED KINGDOM</u>	<u>UNITED STATES</u>	<u>CANADA</u>	<u>FRANCE</u>
PVT/E1	.749	.666	.622	.386	.358
PVT/E2	.770	.709	.667	.401	.403
PFC/E3	.810	.804	.684	.577	.567
CPL/E4	.856	.856	.777	.913	.778
SGT/E5	.926	1.003	.894	.934	.856
SSG/E6	.989	1.231	1.062	1.028	.916
SFC/E7	1.081	1.293	1.218	1.146	Not Available
MSG/E8	1.184	1.397	1.397	1.273	.962
SGM/E9	1.282	1.426	1.758	1.420	1.039

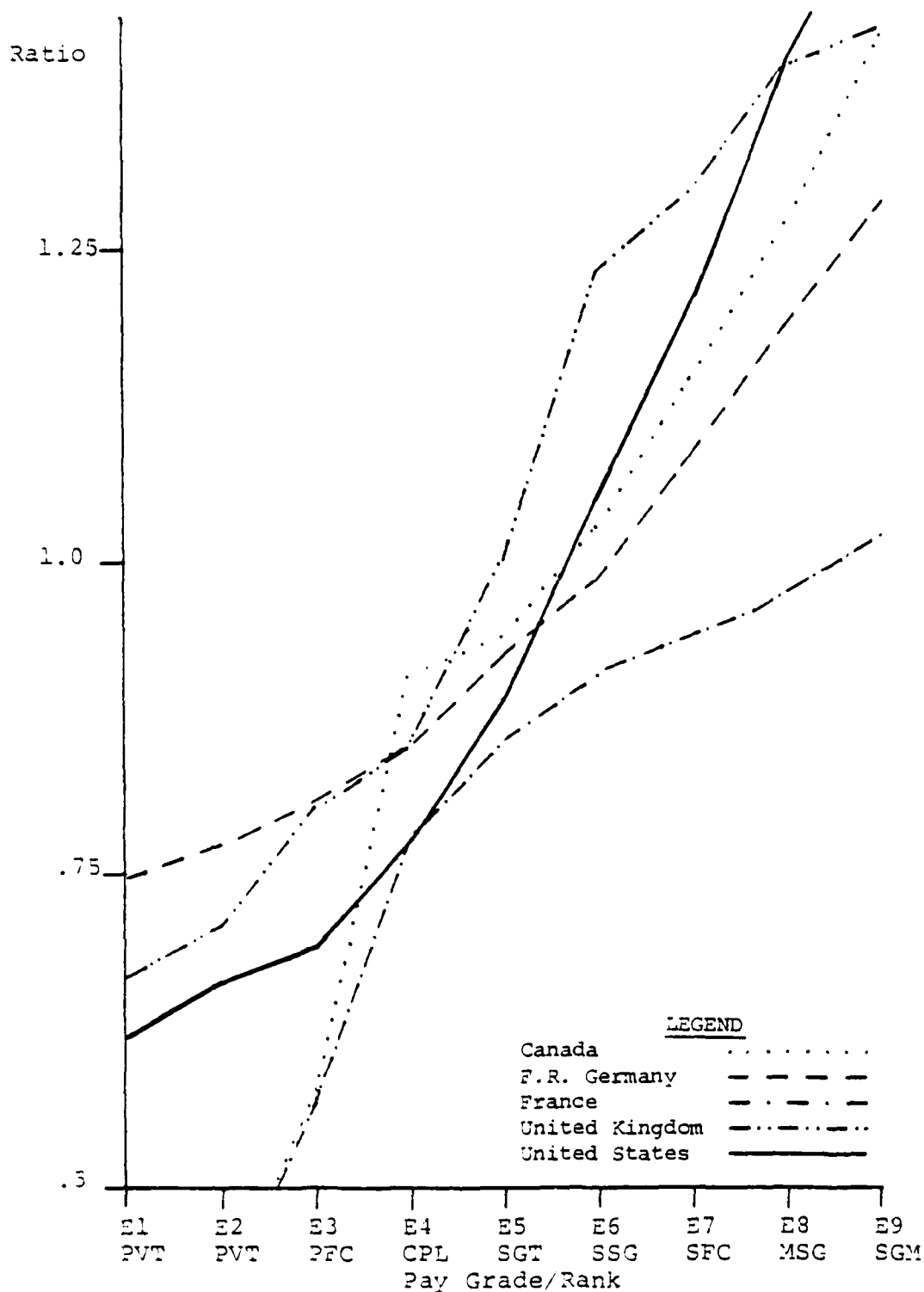


Fig. 4--Ratio Of Enlisted Pay To
Average Gross Earnings Per Typical Worker

c. Ratio of Enlisted Wages to Per Capita Gross Domestic Product.

The ratio of enlisted wages to per capita gross domestic product allows another means of relative comparison between countries. While perhaps not as interesting as the ratio to average gross earnings per typical worker, it may be somewhat more reliable as an indicator since the base year data is 1980 for all countries and no adjustment was required. Table VI and Figure 5 present these comparisons and show that except for France, the United States serviceman ranks below his foreign counterpart, relatively speaking, in grades E3-E7. The recent United Kingdom pay raises are shown clearly, perhaps as indication of the effort required to overcome a retention problem.

2. Regular Officer Comparison

The regular officer comparison includes all seven countries. Pilots are discussed in the subsequent section.

a. Absolute Dollars

Absolute dollar compensation is shown in Table VII and plotted in Figure 6. The relative position of the U.S. is quite consistent in the upper three grades, with the United States third at O4 and second at O5 and O6. The lower three grades are more inconsistent with the United States ranking fourth at O1, second at O2, and first at O3. Since grades O2, O3, and O4 (mid-careerists) appear to have the more serious retention problem, the absolute dollar data does

TABLE VI
RATIO OF ENLISTED PAY TO
PER CAPITA GROSS DOMESTIC PRODUCT

PAY GRADE/ RANK	UNITED KINGDOM	FEDERAL REPUBLIC OF GERMANY	UNITED STATES	CANADA	FRANCE
PVT/E1	1.679	1.341	.995	.674	.514
PVT/E2	1.787	1.379	1.066	.701	.578
PFC/E3	2.027	1.449	1.093	1.008	.814
CPL/E4	2.159	1.532	1.243	1.595	1.117
SGT/E5	2.528	1.657	1.429	1.632	1.228
SSG/E6	3.103	1.770	1.698	1.796	1.314
SFC/E7	3.259	1.935	1.947	2.003	Not Available
MSG/E8	3.421	2.119	2.234	2.224	1.380
SGM/E9	3.594	2.293	2.811	2.481	1.491

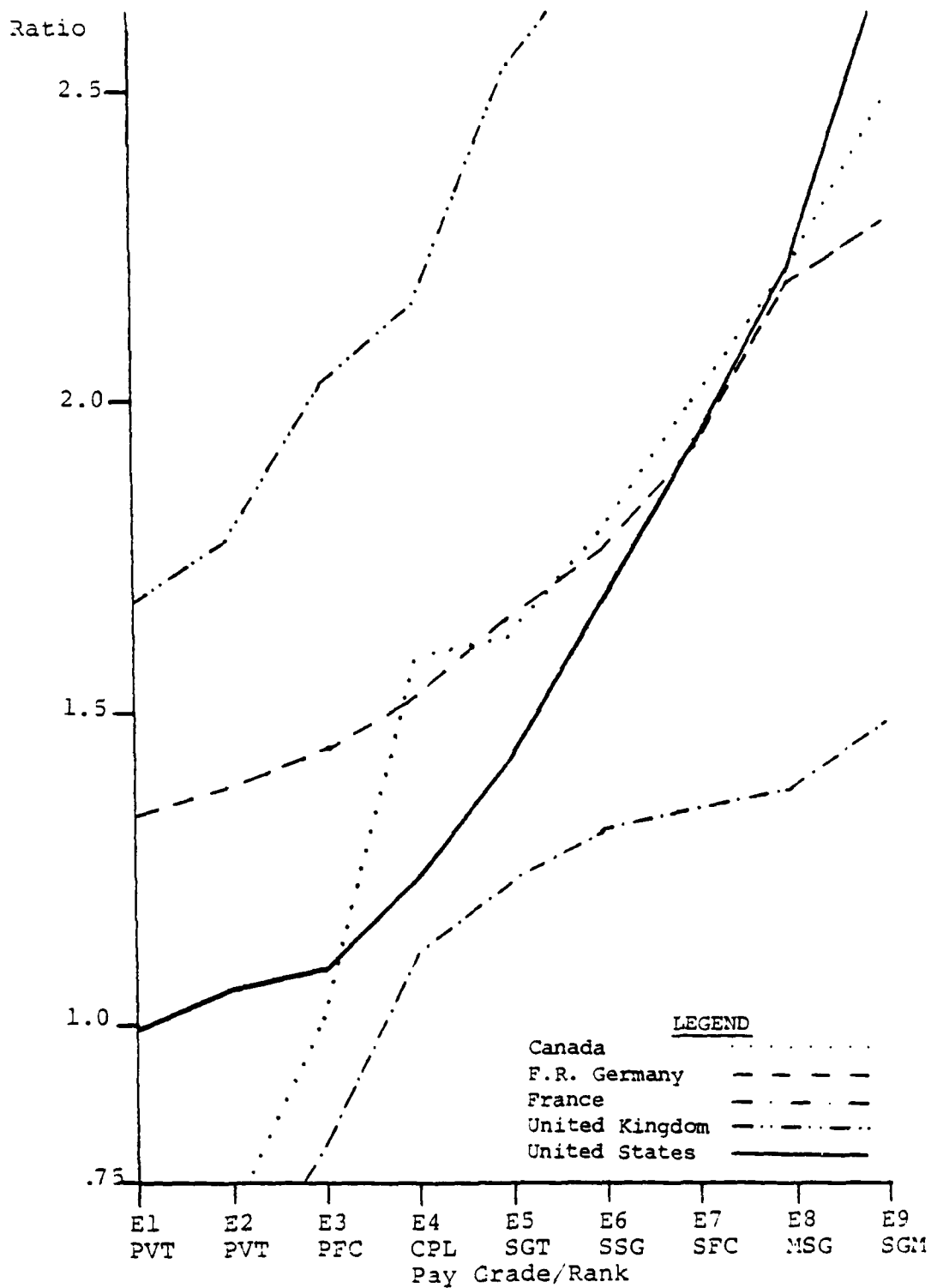


Fig. 5--Ratio Of Enlisted Pay To
Per Capita Gross Domestic Product

TABLE VII

REGULAR OFFICER PAY IN ABSOLUTE DOLLARS¹

RANK/ PAY GRADE	FEDERAL REPUBLIC OF GERMANY	UNITED STATES	DENMARK	UNITED KINGDOM	CANADA	NORWAY	FRANCE
2LT/01	19,273	15,017	19,483	11,176	12,856	16,191	12,852
1LT/02	21,233	21,410	21,552	16,334	14,797	19,127	15,904
CPT/03	24,436	25,399	23,620	20,872	21,783	Not Available	18,269
MAJ/04	31,357	30,137	30,345	27,010	26,367	21,766	21,127
LTC/05	38,692	37,031	36,034	33,759	29,739	25,323	25,340
COL/06	47,946	47,024	42,069	39,654	32,990	29,461	28,946

SOURCES: Refer to List of References, entries, 34, 35, 21, 36, 16, 38, 37

NOTE: 1.

Based upon 1980 pay scales from each country. Norway based on Navy information; all others based on Department of Defense or equivalent Ministry pay scales.

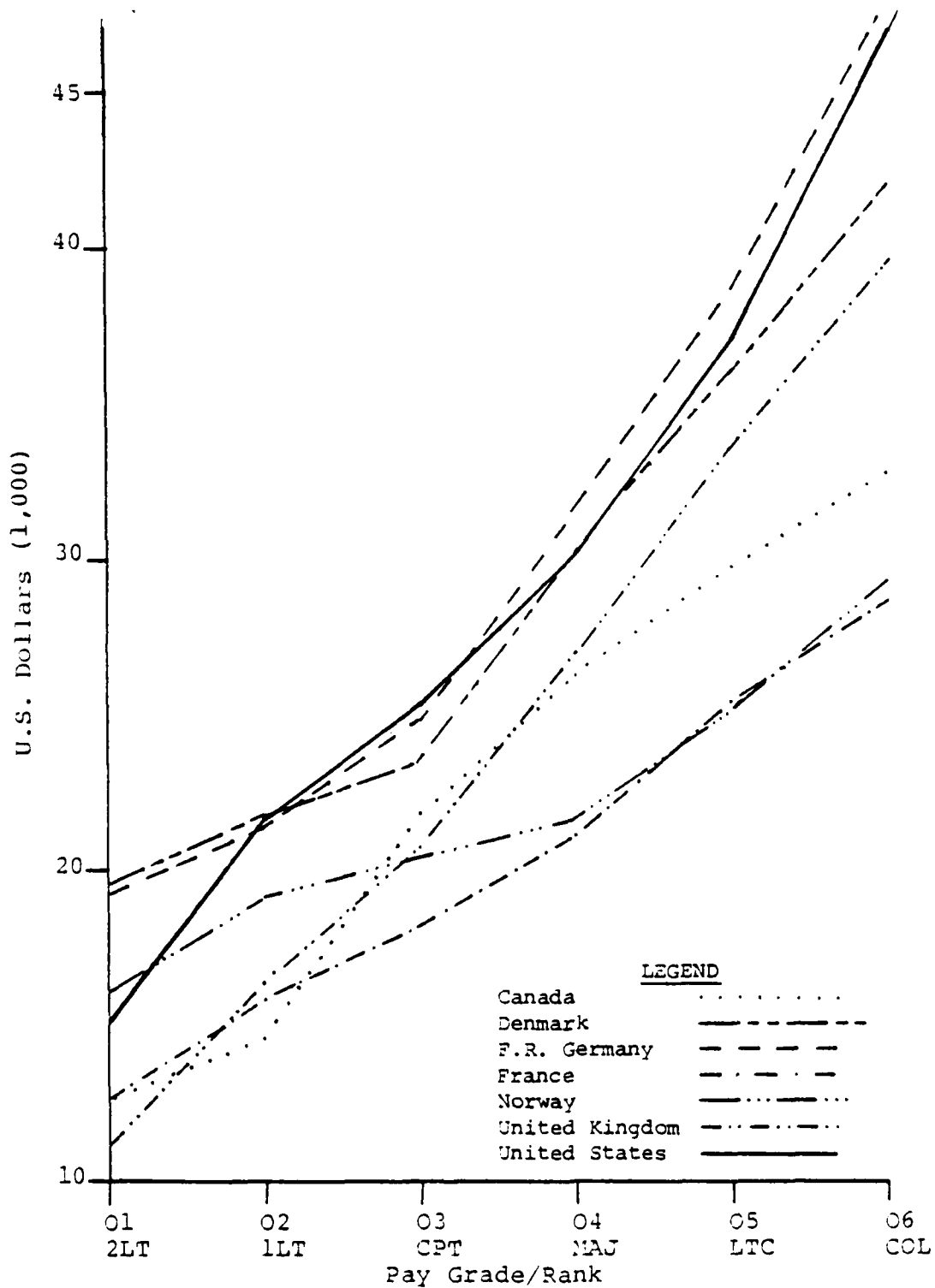


Fig. 6--Regular Officer Pay In Absolute Dollars

not provide any insight. The earlier caution on strict interpretation of absolute data applies here as well.

b. Ratio of Regular Officer Wages to Average Gross Income Per Typical Worker

Table VIII and Figure 7 show that except for pay grades 01 and 05, the United States ranks above the other six countries indicating that wages may not be the only significant factor in the retention of U.S. regular officers. For example, most U.S. officers have a regular undergraduate degree and a high percentage have graduate degrees. This is not generally true for the foreign officers included in this study. European officers are educated through the military system which frequently does not compare directly with a civilian degree. Since U.S. officers receive more training and education that is easily transferable to civilian sector occupations than their foreign counterparts, it is possible that they also have relatively better opportunities in the civilian sector.

c. Ratio of Regular Officer Pay to Per Capita Gross Domestic Product

Table IX and Figure 8 present the information. Except for the United Kingdom, U.S. regular officers rank relatively higher than their counterparts in relation to per capita gross domestic product. Because U.S. officers appear to be well compensated compared to others, yet have a retention problem, this may indicate the importance of nonpecuniary

TABLE VIII

RATIO OF REGULAR OFFICER PAY TO
AVERAGE GROSS EARNINGS PER TYPICAL WORKER

<u>RANK/ PAY GRADE</u>	<u>UNITED STATES</u>	<u>UNITED KINGDOM</u>	<u>FEDERAL REPUBLIC OF GERMANY</u>	<u>FRANCE</u>	<u>CANADA</u>	<u>DENMARK</u>	<u>NORWAY</u>
2LT/01	.972	.802	1.034	1.012	.841	.908	1.017
1LT/02	1.386	1.172	1.139	1.252	.968	1.004	1.202
CPT/03	1.644	1.497	1.311	1.438	1.425	1.100	Not Available
MAJ/04	1.951	1.938	1.682	1.663	1.725	1.414	1.368
LTC/05	2.397	2.422	2.075	1.995	1.946	1.679	1.591
COL/06	3.044	2.845	2.572	2.279	2.158	1.960	1.851

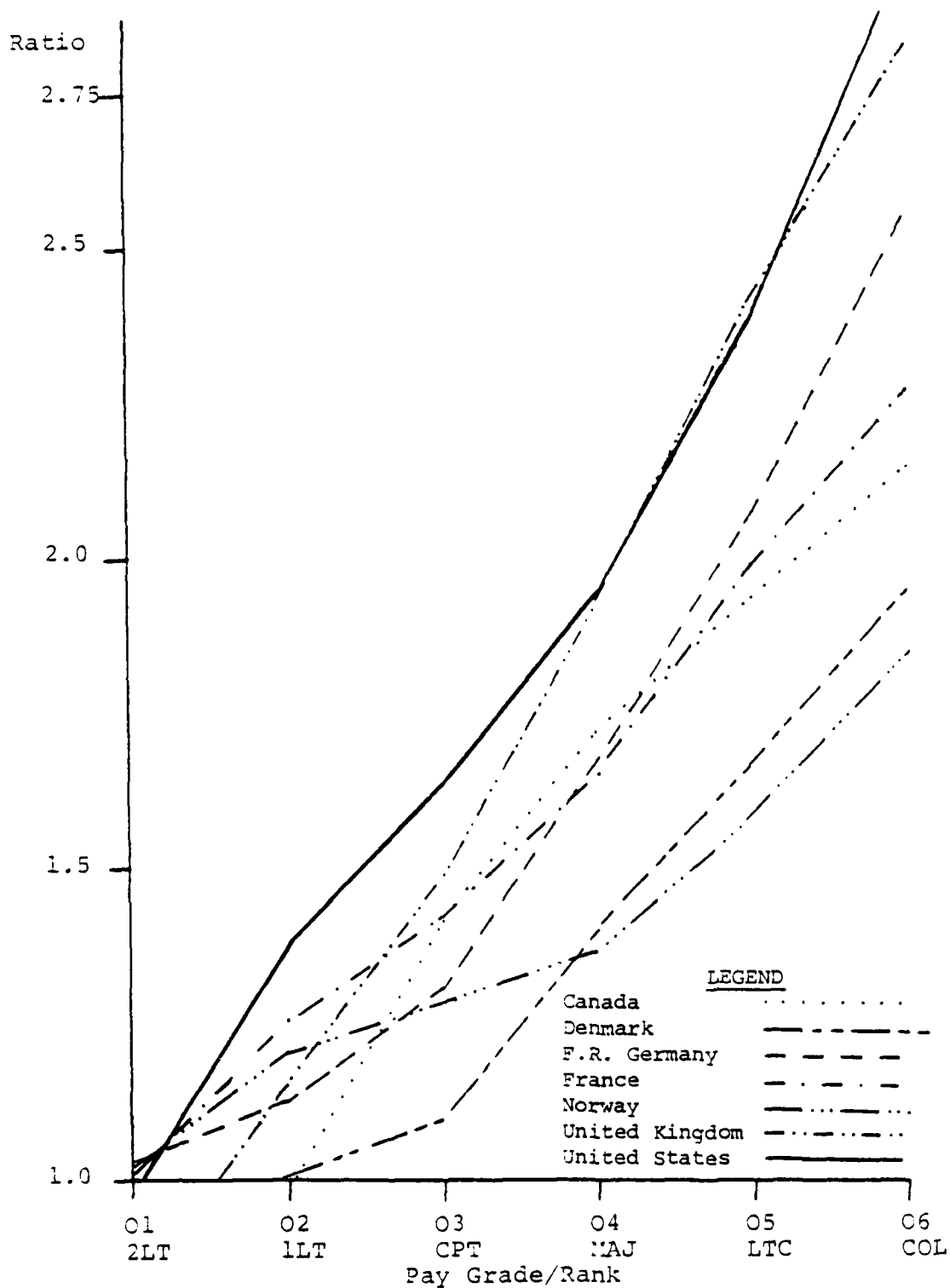


Fig. 7--Ratio Of Regular Officer Pay To
Average Gross Earnings Per Typical Worker

TABLE IX

RATIO OF REGULAR OFFICER PAY TO
PER CAPITA GROSS DOMESTIC PRODUCT

RANK/ PAY GRADE	UNITED KINGDOM	UNITED STATES	FEDERAL REPUBLIC OF GERMANY	CANADA	DENMARK	FRANCE	NORWAY
2LT/01	2.021	1.555	1.850	1.469	1.779	1.452	1.643
1LT/02	2.954	2.216	2.038	1.691	1.968	1.797	1.942
CPT/03	3.774	2.629	2.345	2.489	2.157	2.064	Not Available
MAJ/04	4.884	3.120	3.009	3.013	2.771	2.397	2.210
LTC/05	6.105	3.833	3.713	3.399	3.291	2.863	2.571
COL/06	7.171	4.868	4.601	3.770	3.842	3.270	2.991

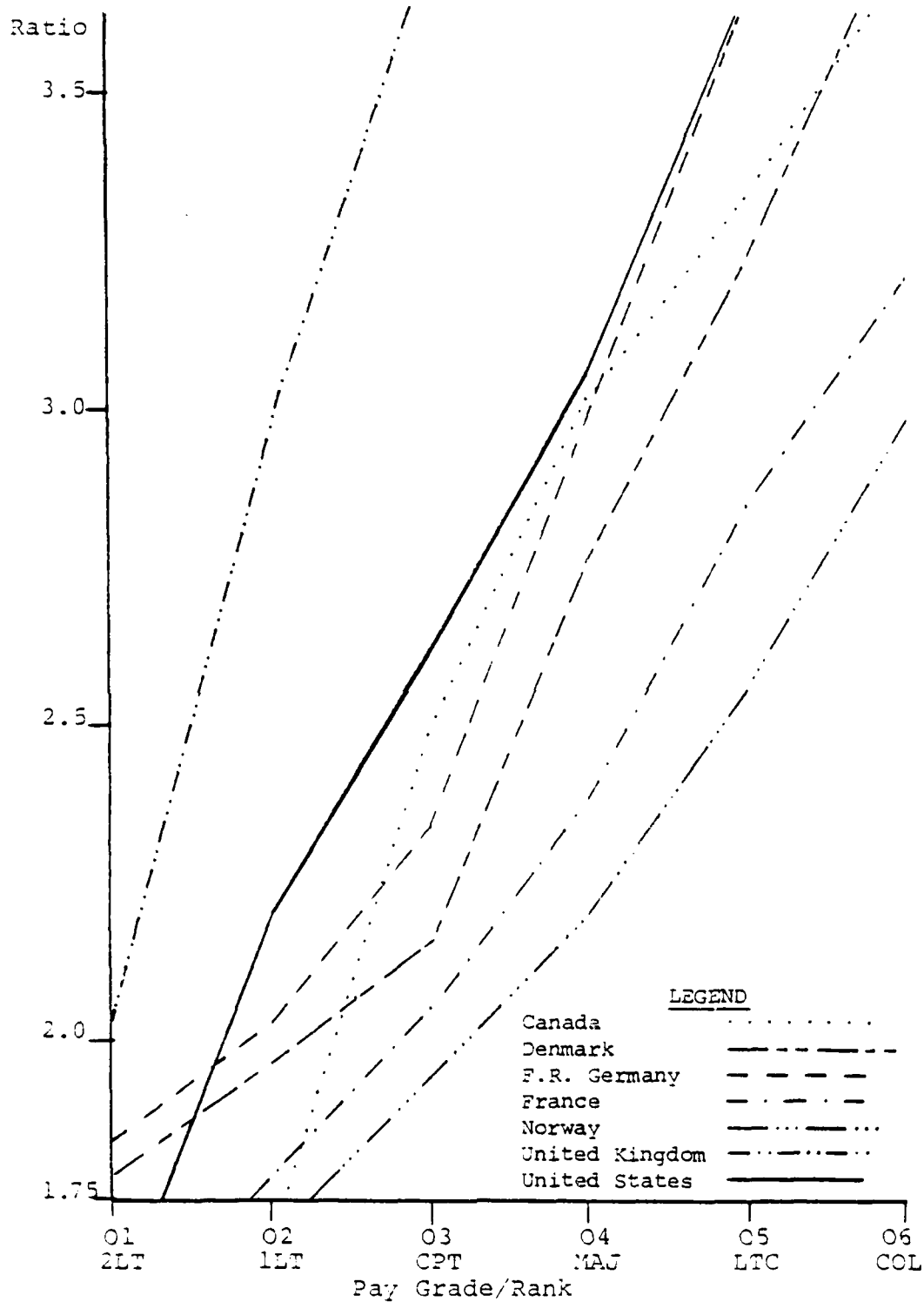


Fig. 3--Ratio of Regular Officer Pay To
Per Capita Gross Domestic Product

factors in occupational choice or in international differences in civilian sector opportunities.

3. Pilot's Comparison

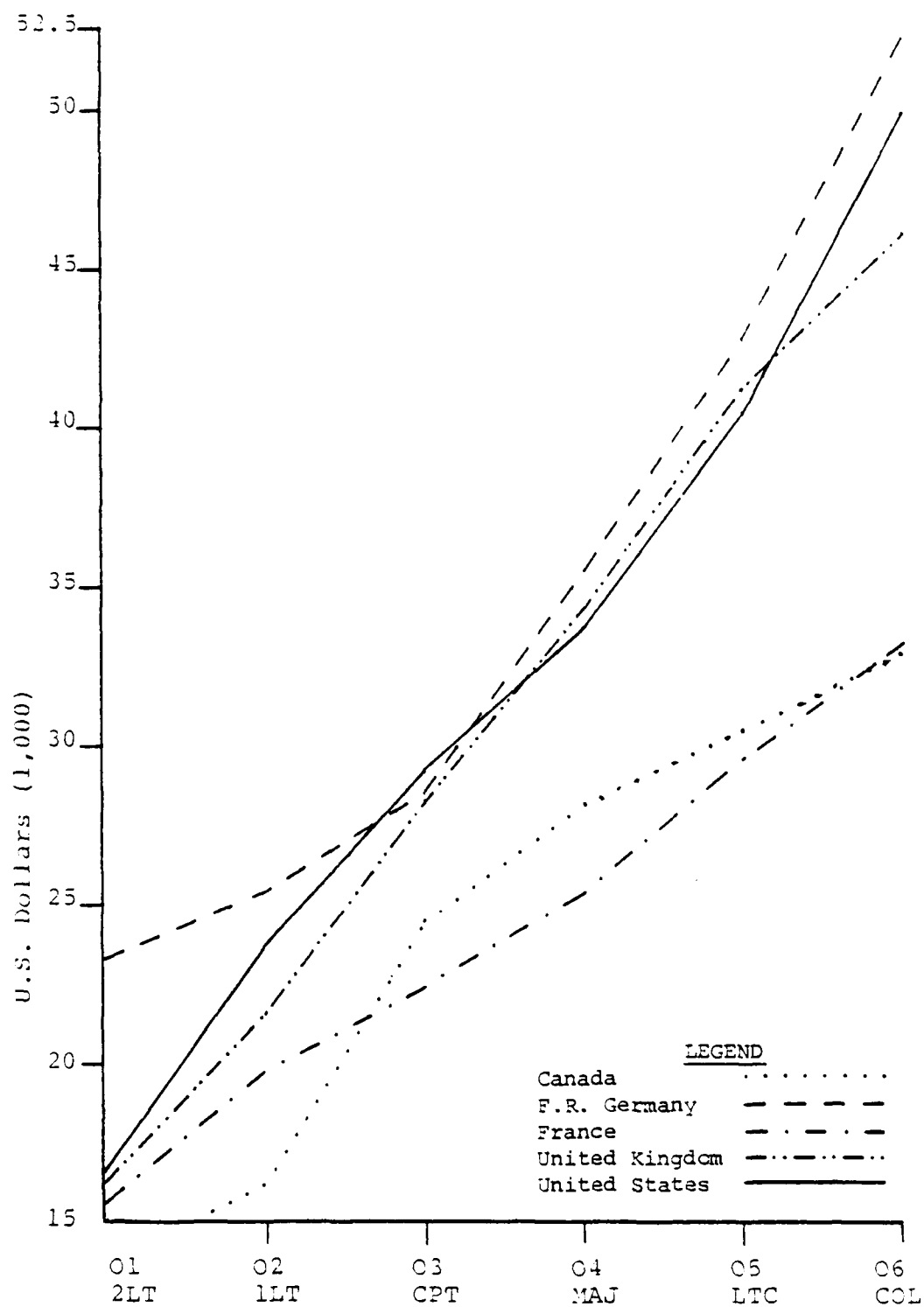
Except for the extra amount paid for the additional training and risk, pilot's compensation in all countries is the same as regular officer compensation. Denmark and Norway are not included because no flight pay data was available. Absolute dollar data, average gross income per typical worker ratios, and per capita gross domestic product ratios are presented and graphed in Tables X, XI, and XII and Figures 9, 10, and 11, showing that United States' pilots fare as well as the regular officer category when compared to other nations. That is, except for British pilots, U.S. pilots are better paid, relatively speaking, than their foreign counterparts.

TABLE X
OFFICER PILOT PAY IN ABSOLUTE DOLLARS¹

<u>RANK PAY GRADE</u>	<u>FEDERAL REPUBLIC OF GERMANY</u>	<u>UNITED STATES</u>	<u>UNITED KINGDOM</u>	<u>CANADA</u>	<u>FRANCE</u>
2LT/01	\$23,381	\$16,880	\$16,381	\$13,632	\$15,876
1LT/02	25,441	23,666	21,525	16,058	19,808
CPT/03	28,544	29,071	28,149	24,403	22,389
MAJ/04	35,465	33,809	34,287	28,017	25,246
LTC/05	42,800	40,403	41,036	30,467	29,460
COL/06	52,054	49,976	46,031	32,990	33,065

SOURCES: Refer to List of References, entries 38, 35, 36, 16, 37

¹Based upon 1980 pay scales from each country



Pay Grade/Rank
Fig. 9--Officer Pilot Pay In Absolute Dollars

TABLE XI

RATIO OF OFFICER PILOT PAY TO
AVERAGE GROSS EARNINGS PER TYPICAL WORKER

<u>RANK/ PAY GRADE</u>	<u>UNITED KINGDOM</u>	<u>UNITED STATES</u>	<u>FRANCE</u>	<u>FEDERAL REPUBLIC OF GERMANY</u>	<u>CANADA</u>
2LT/01	1.175	1.093	1.250	1.254	.892
1LT/02	1.544	1.532	1.560	1.364	1.051
CPT/03	2.019	1.882	1.763	1.531	1.596
MAJ/04	2.460	2.189	1.988	1.902	1.833
LTC/05	2.944	2.616	2.230	2.296	1.993
COL/06	3.367	3.236	2.603	2.792	2.158

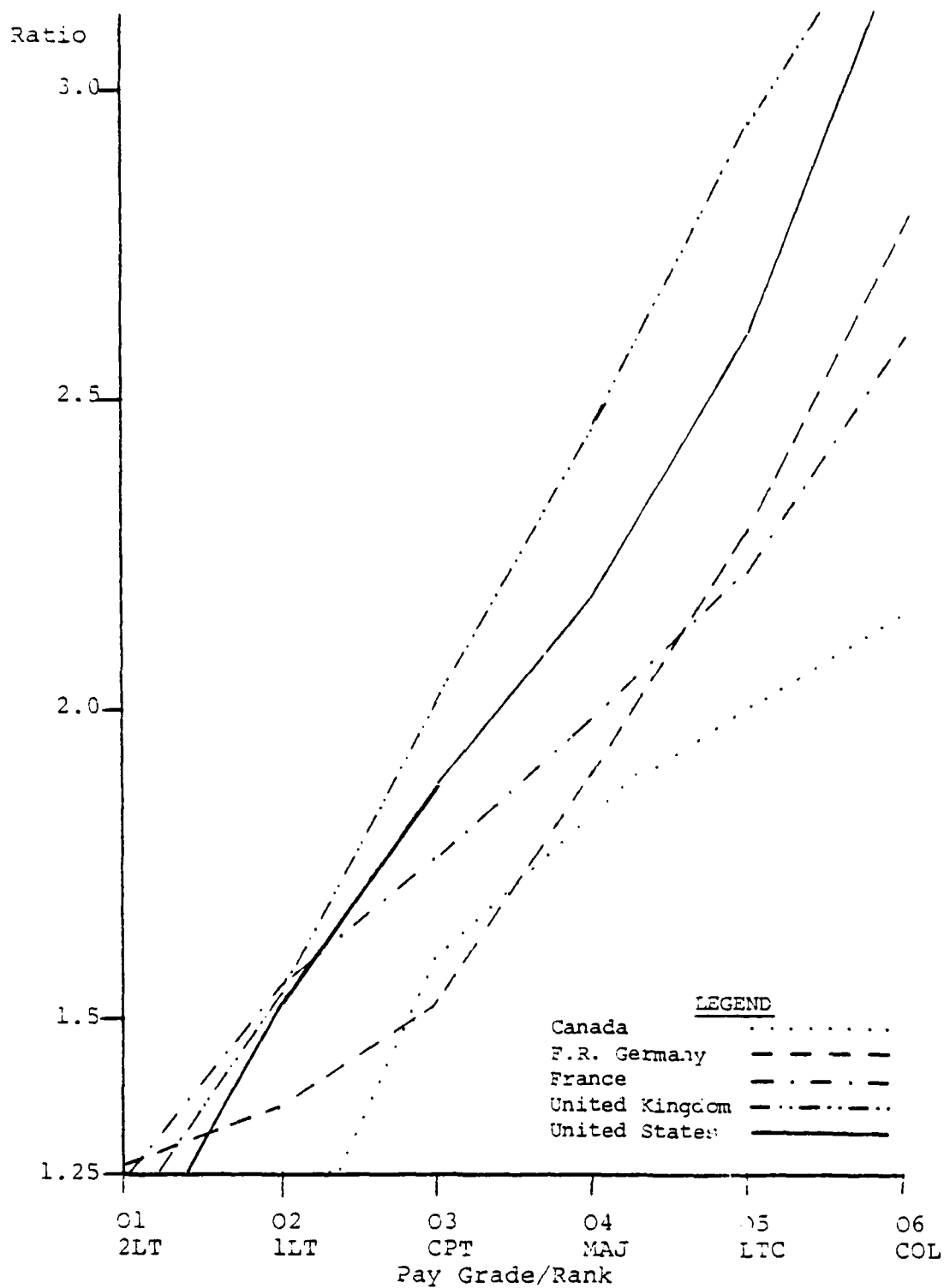


Fig. 10--Ratio Of Officer Pilot Pay To
Average Gross Earnings Per Typical Worker

TABLE XII

RATIO OF OFFICER PILOT PAY TO
PER CAPITA GROSS DOMESTIC PRODUCT

<u>RANK/ PAY GRADE</u>	<u>UNITED KINGDOM</u>	<u>UNITED STATES</u>	<u>FEDERAL REPUBLIC OF GERMANY</u>	<u>CANADA</u>	<u>FRANCE</u>
2LT/01	2.962	1.748	2.244	1.558	1.794
1LT/02	3.892	2.450	2.442	1.835	2.238
CPT/03	5.090	3.009	2.739	2.789	2.530
MAJ/04	6.200	3.500	3.404	3.202	2.853
LTC/05	7.421	4.183	4.107	3.482	3.329
COL/06	8.487	5.173	4.996	3.770	3.736

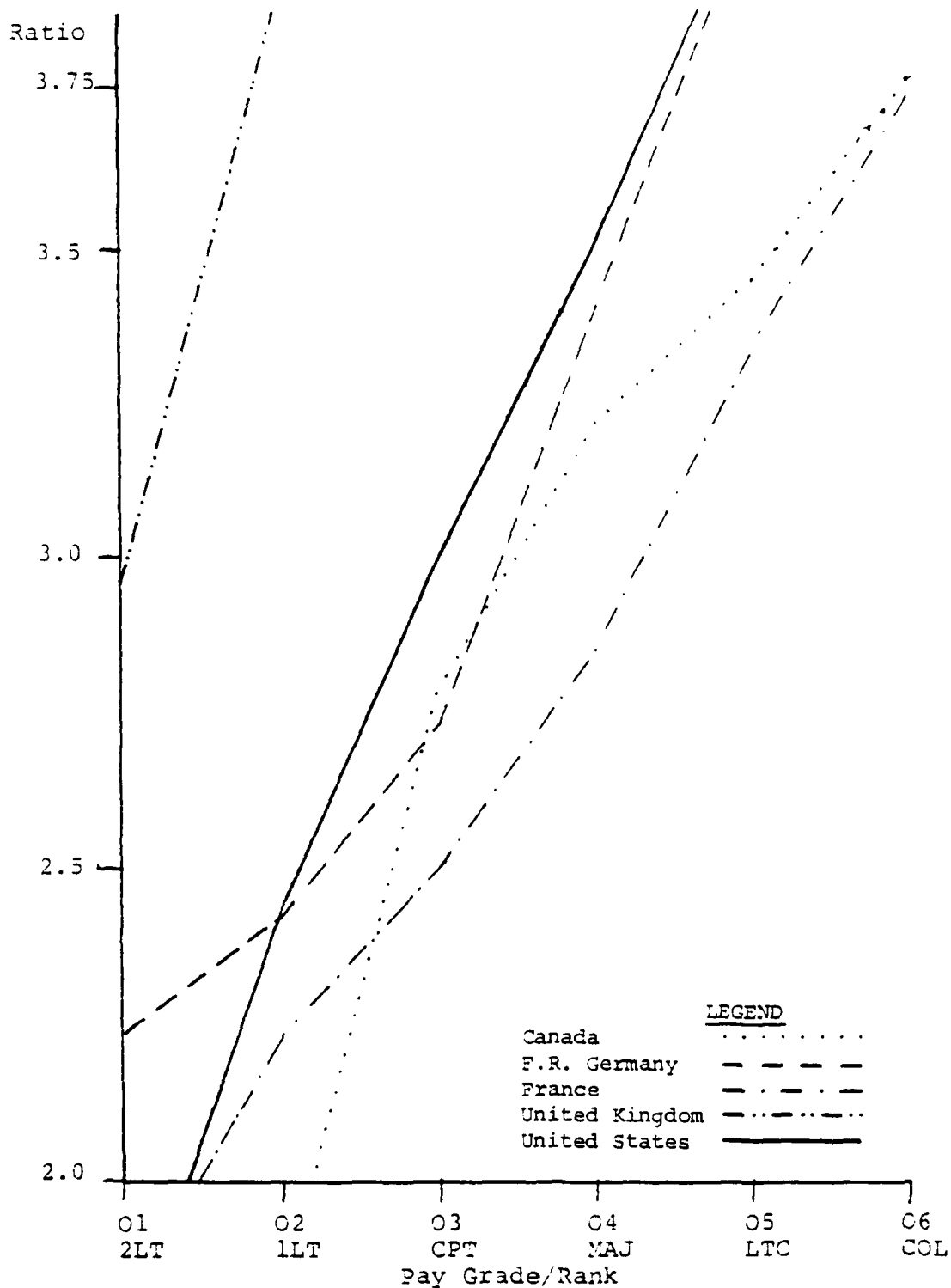


Fig. 11--Ratio Of Officer Pilot Pay To
Per Capita Gross Domestic Product

IV. CONCLUSIONS

Throughout this study, it has been emphasized that the analysis focused on just one aspect of United States mid-career military retention problem: direct compensation. Many other factors must be considered, including indirect pay, fringe benefits, risk, stability, etc. These other determinants must be kept in mind in studying the conclusions, as they were throughout this study.

A. ENLISTED PERSONNEL

The analysis indicates the United States enlisted personnel may be worse off, relatively speaking, than their foreign counterparts in pay grades E1 to E7. This range includes the mid-career noncommissioned officers and petty officers (E5 to E7) who are departing the service today and who constitute part of the problem this thesis set out to investigate. Although the United States is not presently having a problem enlisting enough first-term personnel to fill grades E1-E4, these are the people who later reenlist and become careerists. Thus, their relatively lower pay could be a factor behind the attrition. The study does indicate, however, that the United States' noncommissioned officers and petty officers are being compensated relatively and absolutely less than their foreign counterparts; relatively less meaning compared to the average manufacturing worker and to per capita gross domestic product.

B. REGULAR OFFICERS AND PILOTS

Regular officers and pilots fare well when wages are compared to their counterparts in other countries. Only officers in the United Kingdom appear to be as well or better compensated, relatively speaking. However, consideration must be given to the significant pay raises received by British forces during 1979-80. This conclusion is made in the sense that U. S. military compensation, though fairly generous compared to other nations with smaller retention problems, may still be insufficient to offset the possibly greater disutility associated with military service in the United States or possibly greater civilian sector opportunities for U. S. Officers. For example, the U. S. military may be reassigned to new locations more frequently than foreign counterparts, and such moves also involve the household. This is costly not only in terms of dollars, but also in terms of personal and family considerations. In addition, because U. S. officers tend to be educated in institutions which confer civilian bachelor's and master's degrees, officers are aware of private sector opportunities and the demand for their skills. Consequently, a U. S. officer may have greater job mobility than his foreign counterpart. Unless the possibly greater disutility associated with military service is offset by higher compensation, a resignation may result.

The discussion above is supported by a recent U. S. Air Force survey of departing officers:

Pilots said pay increases were too small, they had little say in future assignments, future assignments were unsatisfactory, civilian jobs had more geographic stability, and civilian jobs held more job satisfaction.

Navigators surveyed gave their top five reasons for leaving as little say in future assignments, promotion opportunity, unsatisfactory future assignments, less family separation in civilian jobs, and more independence in decision-making in civilian jobs.

For non-rated officers, the top five reasons were more satisfaction in civilian jobs, more geographic stability in civilian jobs, non-airline civilian job opportunities, higher pay in civilian jobs, and more independence in decision-making in civilian jobs [40:15].

These general survey results of departing officers indicate that the other determinants of occupational choice are significant to their decision to leave the Air Force and are not sufficiently offset by direct compensation. By extension, these conclusions may also hold in the Army and the Navy.

C. AREAS FOR FURTHER STUDY

The idea that monetary compensation is not the only determinant of occupational choice has been stressed throughout this study. In addition to pay/compensation, the study of nations other than the United States revealed other inter-related determinants which may be worth examining as possible policies for reducing the retention problem.

Figures 1 and 2 in Chapter I demonstrated that in addition to pay, other policies affect retention. Figure 1 illustrates that the slope (or the elasticity) of the supply curve determines what it costs to increase retention, using pay only.

However, Figure 2 illustrates, pay remaining constant, how other factors can shift the supply curve and increase or decrease retention. Thus, it may be worthwhile to examine policies observed elsewhere which do not involve direct compensation. It is possible that such policies might be more cost effective in improving U. S. retention rates than increasing direct pay. Some of the alternative policies identified in this study which may be worthy of evaluation are listed below.

1. "X" Factor

Canada, the United Kingdom, and Norway recognize the greater (perceived) disutility of military service by compensating for it directly as opposed to indirect methods in the United States. The question is to which degree will formal recognition of the disutility of military service improve U. S. military retention?

2. Less Strict Military Discipline

Permission to have longer hair and "gentling" the system may help initial recruitment but may not affect reenlistment. If both recruiting and retention were improved, however, the gains may be offset by reduced military effectiveness.

3. Overtime

Extra payments for extra hours worked may have merit. Extra leisure time in lieu of overtime pay might also be considered. However, this policy increases cost per effective manhour.

4. Reduce Number of and Cost of Moves

Study of the reassignment policies of other countries may

provide ideas for reducing the number of moves a U. S. military family must take. Adoption of the British-style regimental system in the United States may not only enhance unit cohesion, but also improve retention through greater stability [41]. For required moves, full reimbursement of all moving expenses including pre-and post-move motel accommodations, real estate and attorney fees on the sale of property, travel, and the cost of closing and opening a household, may also improve retention.

5. Pay Negotiations

Allowing negotiation for pay through a wage system that rewards special qualifications as observed, for example, in Scandinavia may also help retention.

6. Officer Education

Explicit acceptance of U. S. officer education as possibly being more easily transferable to the civilian sector and taking corrective or compensatory action, may also improve retention.

7. Retirement Policy

Retirement policies of other nations vary greatly and many have unique features which may enhance retention. Further study may indicate that some of these features would be adoptable to the U. S. system.

All of the above policies can shift the retention supply curve. None are costless and therefore, their cost-effectiveness relative to increasing compensation should be carefully examined.

D. SUMMARY

A valid international comparison of military compensation, even one of such narrow scope as this one, requires much effort, time, and expense. Ideally, each country should be visited and the pay information, qualified by explanation, should be obtained directly from the appropriate defense agencies or representatives. Staff officers involved with compensation should review calculations for each country to ensure that all components of direct compensation are included. Additional bases for relative comparison are required. Per capita gross domestic product and the average gross income per typical worker are insufficient for examining the relative positions in society held by enlisted personnel and officers. Comparing military wages to those of respective civilian counterparts like doctors, lawyers, civil servants, mechanics, etc. would be more meaningful.

In summary, this thesis investigated the problem of retaining mid-career officers, noncommissioned officers and petty officers in the U. S. military. The analysis indicated that United States' noncommissioned officers and petty officers are being compensated relatively and absolutely less than their foreign counterparts but that this does not hold for United States' officers. This may imply that the enlisted retention problem results at least in part from insufficient compensation. However, the study also indicates that monetary compensation is not the only determinant affecting retention. The United States' greater retention

problems may be due to other occupational choice factors interrelated with compensation, i.e., it is possible that current U. S. compensation levels may be insufficient to offset the relatively greater perceived disutility associated with U. S. military service, or U. S. military personnel may have greater opportunities in the civilian sector than their foreign counterparts. Several policies other than compensation were discussed and may be worth examining in the United States.

LIST OF REFERENCES

1. Laird, Melvin R., People, Not Hardware: The Highest Defense Priority, American Enterprise Institute for Public Policy Research, p. 1-24, January 1980.
2. "Who'll Fight for America?", Time, p. 24-37, 9 June 1980.
3. Sheils, Merrill, "Is America Strong Enough?", Newsweek p. 48-67, 27 October 1980.
4. Becker, Gary S., Economic Theory, p. 166-183, Alfred A. Knopf, Inc. 1971.
5. Spencer, Milton H., Contemporary Macroeconomics, p. 62-80, Worth Publishers, Inc., 1977.
6. Nash, Allan N., Carroll, Stephen J., Jr., The Management of Compensation, p. 1-295, Brooks/Cole Publishing Company, 1975.
7. Mansfield, Edwin, Microeconomics: Theory and Applications, p. 351-380, W.W. Norton and Company, Inc., 1975.
8. Binkin, Martin, The Military Pay Muddle, p. 1-17, The Brookings Institution, 1975.
9. Cooper, Richard V.L., The All-Volunteer Force: Five Years Later, p. 1-68, Rand Corporation, December 1977.
10. "New Bennies," Army Times, p. 24, 6 October 1980.
11. Sohlberg, Ragnhild, Professor, Naval Postgraduate School, Monterey, California, discussion with Myron C. Oyloe, on 31 October 1980.
12. United States Defense Intelligence Agency, "Pay and Allowances, UK," summary sheet, 1980.
13. Atcherley, Sir Harold, Chairman, Review Body on Armed Forces Pay Ninth Report, p. 1-84, Her Majesty's Stationery Office, May 1980.
14. Janowitz, Morris Dr., "The Citizen Soldier and National Service," Air University Review, p. 2-16, November - December, 1979.

15. Sohlberg, Ragnhild, Defense Manpower Policies in Northern and Central European NATO, p. 1-28, N-1314-MRAL, Rand Corporation, February, 1980.
16. White, G.T., Colonel, National Defence Headquarters, Ottawa, Ontario, Letter to Major Myron C. Oyloe, Subject: Canadian Military Compensation, 7 August 1980.
17. United States Department of Defense, The Third Quadrennial Review of Military Compensation, Volume IX, p. 1-34, 31 August 1976.
18. Canadian National Defence Headquarters, Digest of the Canadian Forces Retirement Benefits, p. 1-25, 16 May 1977.
19. Harris, William I., Lieutenant Colonel, A Survey and Analysis of Servicemen's Unions, Master's Thesis, U.S. Army War College, Carlisle Barracks, Pennsylvania, 28 May 1975.
20. Kristensen, Jorn, President, Centralforeningen for Stampersonel, Denmark, Letter to Major Myron C. Oyloe, Subject: Trade Union Procedures, 28 August 1980.
21. Sorensen, T.K., Lieutenant Colonel, Hovedorganisationen af Officerer af A-Linien, Denmark, Letter to Major Myron C. Oyloe, Subject: Danish Military Compensation, 25 September 1980.
22. Ehrhard, Bernard W., Executive Officer, French Military Attache, Washington, D.C., Letter to Major Myron C. Oyloe, Subject: French Military Compensation, 25 July 1980.
23. United States Defense Intelligence Agency, "Pay and Allowances, France," summary sheet, 1980.
24. United States Defense Intelligence Agency, "Pay and Allowances, Federal Republic of Germany," summary sheet, 1980.
25. Peters, Hans, Major, Federal Republic of Germany Air Force, interview, Subject: Federal Republic of Germany Military Compensation, 13 November 1980.
26. United States Defense Intelligence Agency, "Pay and Allowances, Norway," summary sheet, 1980.
27. "Foreign Currency Exchange Guide," San Francisco Examiner and Chronicle, p. 11, 21 September 1980.

28. Ostry, Sylvia, "The World Economy in the 1970's and 1980's," OECD Observer, p. 12-19, March 1980.
29. Sloan, Barbera, Reference Librarian, Organization for Economic Cooperation and Development, Washington, D.C., Phone Conversation with Major Myron C. Oyloe, 24 October 1980.
30. "Economic Policy in the Early 1980's," OECD Observer, p. 30, January 1980.
31. Bryant, Mike, Major, U.S. Department of Defense, Enlisted Personnel Management, Phone Conversation with Major Myron C. Oyloe, 13 November 1980.
32. DePhillips, Terry, Major, U.S. Department of Defense, Officer Personnel Management, Phone Conversation with Major Myron C. Oyloe, 13 November 1980.
33. Scitovsky, Tibor, "An International Comparison of the Trend of Professional Earnings," American Economic Review, p. 25-42, March, 1966.
34. Ludwig, G., Lieutenant Colonel, Bundesminister der Verteidigung, Federal Republic of Germany, letter to Major Myron C. Oyloe, SUBJECT: Federal Republic of Germany Military Compensation, October 1980.
35. "Details of Pay Raise, New Benefits," ARMY Times, p. 16, 22 September 1980.
36. Ministry of Defense, London, Pay Review, 1980-Revised Pay Rates, Allowances, and Charges, p. 1-6, 1 May 1980.
37. Ministere De La Defense, Republique Francaire, Bulletin Official Des Armees, p. 1829-2014, 26 May 1980.
38. Heggelund, Tore, Lieutenant Commander, Headquarters, Defense, Command, Norway, Letter to Major Myron C. Oyloe, SUBJECT: Norwegian Military Personnel Economical Conditions - Income and Benefits, 15 August 1980.
39. Sohlberg, Ragnhild, Professor, Naval Postgraduate School, Monterey, California, discussion with Myron C. Oyloe, on 1 December 1980.
40. Hines, Paul, "Pay Not Main Cause of Air Force Officer Losses," ARMY Times, p. 15, 3 November 1980.
41. Webbe, Steven, "Army Considering Regimental System," Monterey Peninsula Herald, p. 46, 23 November 1980.

INITIAL DISTRIBUTION LIST

	No. Copies
1. Defense Technical Information Center Cameron Station Alexandria, Virginia 22314	2
2. Library, Code 0142 Naval Postgraduate School Monterey, California 93940	2
3. Department Chairman, Code 54 Naval Postgraduate School Monterey, California 93940	1
4. Professor Ragnhild Sohlberg, Code 6423 Naval Postgraduate School Monterey, California 93940	9
5. Lieutenant Colonel Walter Skierkowski, Code 54 Zs Naval Postgraduate School Monterey, California 93940	2
6. Major Myron C. Oyloe 2 Edith Court Hampton, Virginia 23669	1
7. Lieutenant Colonel C. J. Carey, RCT British Army Staff British Embassy Washington, D.C. 20008	1
8. Lieutenant Colonel G. Ludwig Bundesminister der Verteidigung (FÜ S IV 2) Federal Republic of Germany	1
9. Lieutenant Commander Tore Heggelund Headquarters Defense Command Norway Oslo mil/Huseby OSLO 1, Norway	1
10. Lieutenant Colonel T. K. Sorenson Hovedorganisationen af Officerer af A-Linien Rosenvaengets Alle 33 2100 Kbhvn Ø Denmark	1

- | | |
|--|---|
| 11. Jorn Kristensen
President
Central Foreningen for Stampersonel
Denmark | 1 |
| 12. Colonel Bernard W. Erhard
Executive Office
French Military Attache
2535 Belmont Road, Northwest
Washington, D.C. 20008 | 1 |
| 13. Colonel G. T. White
National Defence Headquarters
Ottawa, Ontario K1A 0K2
Canada | 1 |
| 14. Clifford M. Oyloe
1225 Park Place
Williston, North Dakota 58801 | 1 |
| 15. Gordon Skaare
P. O. Box 763
Williston, North Dakota 58801 | 1 |
| 16. Professor James Blandin, Code 6427
Naval Postgraduate School
Monterey, California 93940 | 1 |

DATE
FILMED
8